Welcome to the 2020 Online HYSPLIT Workshop (DAY 3 of 4)

The broadcast is scheduled to start at:
08:30 Eastern Daylight Time (EDT) = 12:30 UTC

NOAA Air Resources Laboratory
June 22-25, 2020

Day 3, Introduction (8:30 – 8:45)

Dr. Mark Cohen, Lead Scientist, HYSPLIT Modeling Group

- ❑ Agenda for today
- ❑ Quick recap of logistics
- ❑ Tips, tricks, and some key questions from yesterday
- ❑ ... And then, on to the course!

HYSPLIT
AIR RESOURCES LAB

Workshop guidance and resources posted at

Workshop Web Page

https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php

+ this Intro presentation available as a Handout, and on Workshop Web Page

+ Roland's presentation slides available as a Handout, and on Workshop Web Page

Agenda – Day 1

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Introduction and logistics
12:45 – 13:30	08:45 – 09:30	1. Installing HYSPLIT
13:30 – 14:15	09:30 – 10:15	2. Testing the installation
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 15:15	10:30 – 11:15	3. Gridded meteorological data sets
15:15 – 16:00	11:15 – 12:00	4. Trajectory calculations
16:00 – 17:00	12:00 – 13:00	Break
17:00 – 17:45	13:00 – 13:45	4. Trajectory calculations (continued)
17:45 – 19:00	13:45 – 15:00	5. Trajectory options
19:00 – 19:15	15:00 – 15:15	Break
19:15 – 20:20	15:15 – 16:20	6. Trajectory statistics
20:20 – 20:30	16:20 – 16:30	First day wrap-up / questions

Note: all times are approximate

Agenda – Day 2

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Comments / questions from previous day
12:45 – 14:15	08:45 – 10:15	7. Air Concentration Calculations
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 15:30	10:30 – 11:30	8. Configuring the CAPTEX simulation
15:30 – 16:30	11:30 – 12:30	Break
16:30 – 17:00	12:30 – 13:00	8. Configuring the CAPTEX simulation (continued)
17:00 – 18:30	13:00 – 14:30	9. Air Concentration Parameter Sensitivity
18:30 – 18:45	14:30 – 14:45	Break
18:45 – 19:30	14:45 – 15:30	10. Alternate Display Options
19:30 – 20:20	15:30 – 16:20	11. Pollutant Transformations and deposition *(start this section if time permits)*
20:20 – 20:30	16:20 – 16:30	Second day wrap-up / questions

Note: all times are approximate

Agenda – Day 3

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Comments / questions from previous day
12:45 – 14:15	08:45 – 10:15	11. Pollutant Transformations and deposition
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 16:00	10:30 – 12:00	12. Air Concentration Uncertainty
16:00 – 17:00	12:00 – 13:00	Break
17:00 – 19:00	13:00 – 15:00	13. Source Attribution Methods
19:00 – 19:15	15:00 – 15:15	Break
19:15 – 20:20	15:15 – 16:20	14. Wildfire Smoke and Dust Storms
20:20 – 20:30	16:20 – 16:30	Third day wrap-up / questions

Note: all times are approximate

Agenda – Day 4

UTC	EDT	Agenda Item
12:30 – 12:45	08:30 – 08:45	Comments / questions from previous day
12:45 – 14:05	08:45 – 10:05	15. Radioactive Pollutants and Dose
14:05 – 14:15	10:05 – 10:15	** **Special Presentation:** *An overview of the HySPLIT applications from NCSR Demokritos.* Athanasios Sfetsos, NCSR Demokritos, Greece
14:15 – 14:30	10:15 – 10:30	Break
14:30 – 16:00	10:30 – 12:00	16. Volcanic Eruptions with Gravitational Settling
16:00 – 17:00	12:00 – 13:00	Break
17:00 – 18:00	13:00 – 14:00	17. Custom Simulations (Chris Loughner, NOAA ARL, will present section 17.5)
18:00 – 19:00	14:00 – 15:00	** **Special Presentation:** *STILT Demonstration* Derek Mallia, University of Utah, United States
19:00 – 19:15	15:00 – 15:15	Break
19:15 – 20:30	15:15 – 16:30	Final wrap-up / questions

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Quick Recap of Logistics

Logistics Summary

- Workshop resources posted at Workshop Web Page
  - Recordings, files, handouts, virtual posters, ...
- Everyone's microphone will remain automatically muted throughout the event
- We may ask you to *Raise your Hand*, e.g., "Are you done with simulation?"
  - We will then automatically lower everyone's hand.
- Go-to-Webinar Question Panel: General Workshop questions (private, to staff)
- HYSPLIT Forum: Questions about HYSPLIT, Graphical User Interface, and Tutorial
  - Post in corresponding section that matches relevant Tutorial section
  - Sign up for a free account if you haven't already done this
  - Details for posting in Workshop Intro handouts (e.g., later in this file)
- Recordings taking longer than expected to process
  - *Likely not available until 18-24 hours after a given session ends*
  - Information on viewing videos is on Workshop Web Page, and in Workshop Intro handouts
  - **Note:** Recordings on ARL Web Site will be available much longer than those on Go-to-Webinar server
- Met data files for special dust simulations posted on the Workshop Web Page
  - Just click on link to download

Logistics Summary

https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php

Recordings. Videos of each day's on-line sessions are being created for review by participants, e.g. Processing of the videos to make them viewable takes significant time. There are two places that yo be identical:

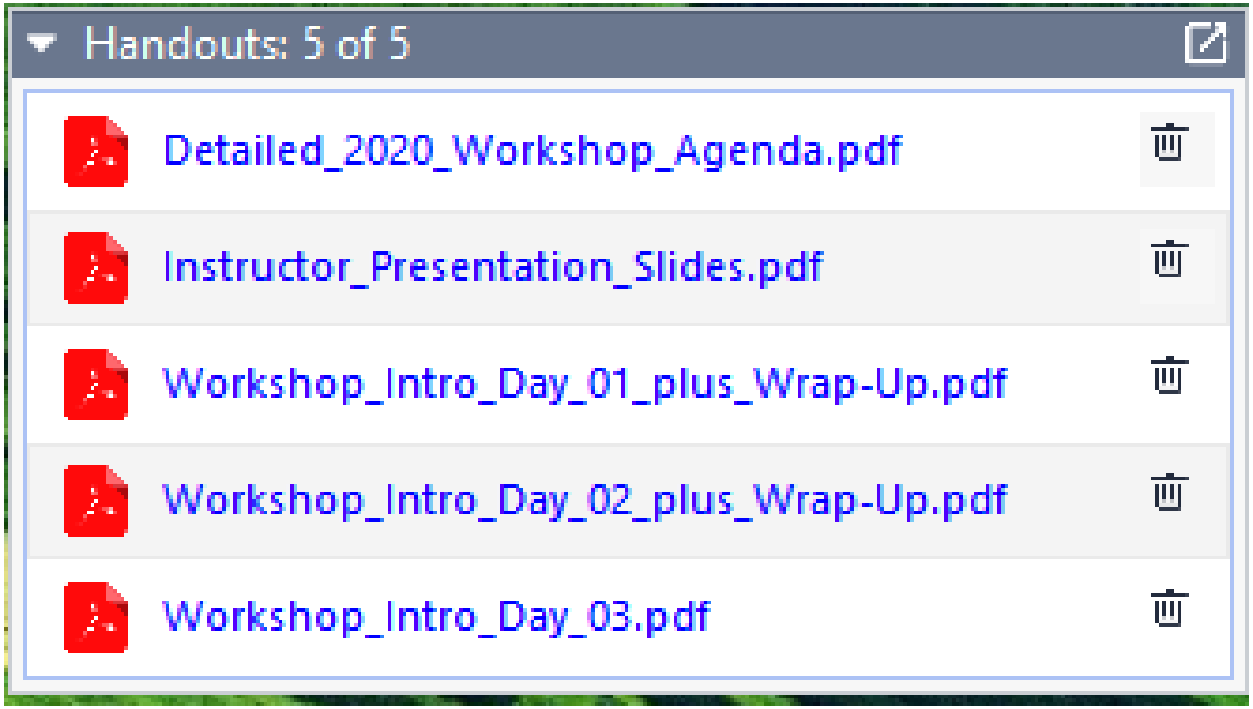
1. **HYSPLIT Workshop Channel.** ~~This version of each day's video will likely be ready first~~ ? -- pe and will be available, once it is ready, on the HYSPLIT Workshop channel hosted by Go-to simple Go-to-Webinar registration page where you enter your name and email address, and

2. **The NOAA Air Resources Laboratory website.** This version of the video may take longer t corresponding entry below will become a link. When you click on one of these links, you shou

   - Instructor's presentation slides for days 1 to 4.
   - Workshop video recording day 1 (June 22, 2020), Handout for day 1.
   - Place holder for Day 2 video recording. Handout for day 2.
   - Place holder for Day 3 video recording. Meteorological data files for dust storm simulatio
     - 1-degree GDAS data spanning from 6/15 to 6/21/2020 (572 MB)
     - 1-degree GFS forecast for the period from 6/22 to 7/1/2020 (776 MB) - This file
   - Place holder for Day 4 video recording.

Just click on each link to download each of these met files

Logistics Summary



- Available as Handouts, within the Go-to-Webinar session,
- Available on the Workshop Web Page, associated with each day's Recording

Tips, Tricks, and some Key Questions From Yesterday

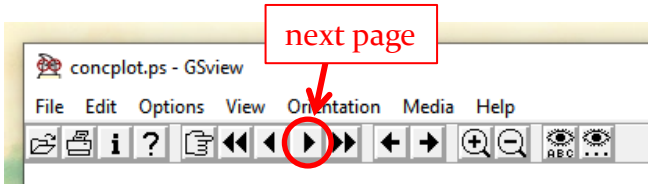
- HYSPLIT mass and concentration units
  - Tied to whatever you "mean" when you put in the emissions rate.
  - If set emit rate of 2 per hour and you mean 2 kg per hour, then output concentration units are kg/m3, and output deposition units are kg/m2
  - If set emit rate of 2 per hour and you mean 2 grams per hour, then output concentration units are in g/m3, and output deposition units are g/m2

- All the files associated with the run you just did (or tried to do) are in your hysplit/working directory (e.g., CONTROL, SETUP.CFG, MESSAGE, output files, graphics...)
  - Examine CONTROL file in text editor – sometimes you will see an obvious error!
  - If get error saying can't delete MESSAGE file, the MESSAGE file may be open in another application.
  - Also, can try to delete MESSAGE file, and if can't then system may tell you why
    - https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=3&t=1261&p=3529&hilit=permission+to+delete#p3529

- Display > error > **`concplot.ps not found`**, it probably means something happened in run and cdump file was not usable (e.g., all zeros, ...)
    - https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=3&t=1261&p=3529&hilit=permission+to+delete#p3529

- GUI menus have context sensitive HELP (...takes you to relevant page of Users Guide...)

- Multi-page output maps
  - MAC – just scroll down to see each frame
  - Windows – advance page within Ghostview
    - https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=45&t=1888



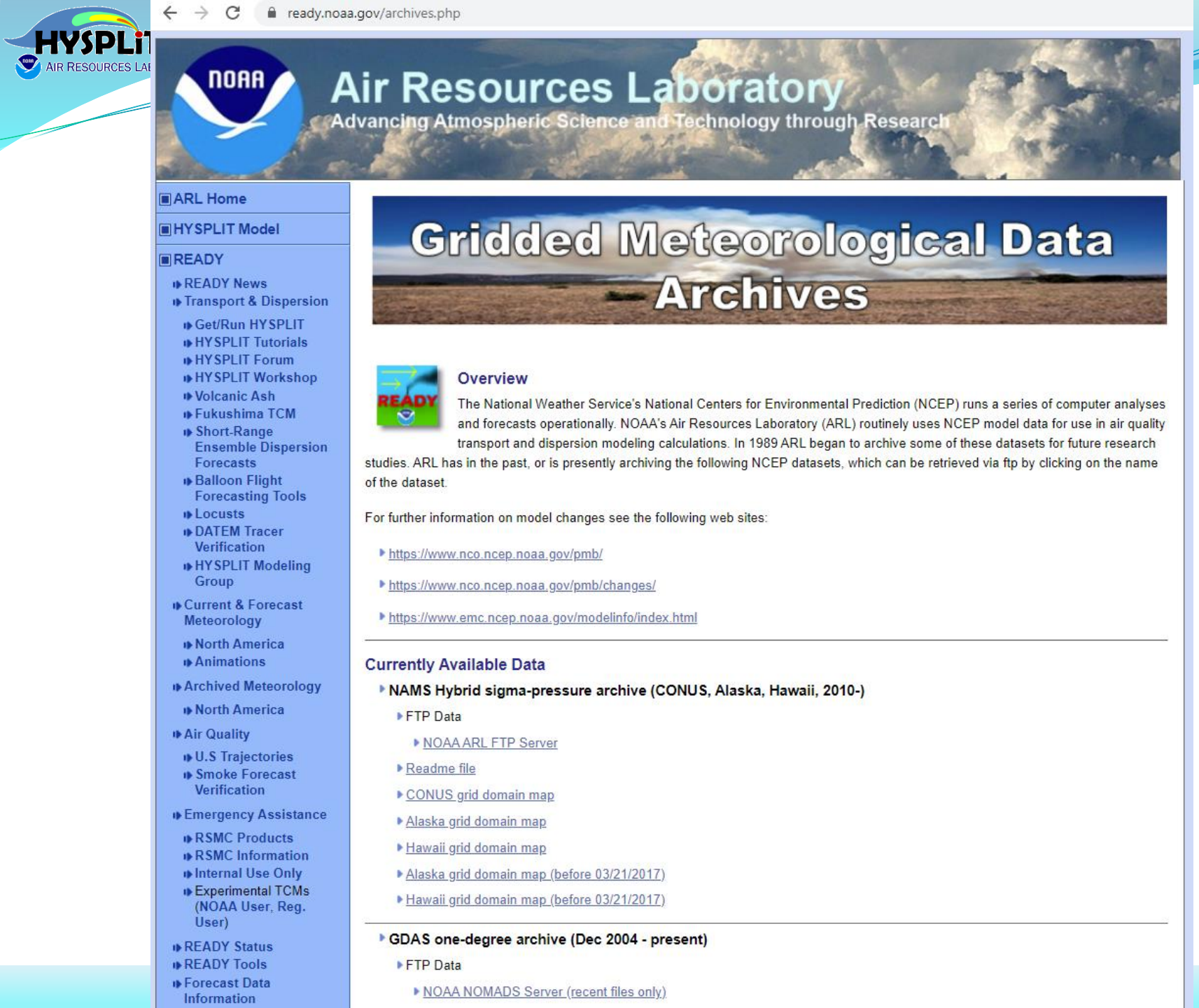
- Shortcut: When Tutorial says save or retrieve a CONTROL or SETUP.CFG file, versions of those same files in: Tutorial > files (but will likely need to adjust directory location for met data file
  - https://hysplitbbs.arl.noaa.gov/viewforum.php?f=46

- if animation fails, you don't have convert.exe or HYSPLIT doesn't know where to find it
  - When installing ImageMagick, must "install legacy utilities, e.g., convert.exe"
  - Advanced > Configuration Setup > Set Directories (can tell HYSPLIT where a key executable is)
    - https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=39&t=1891&p=5604&hilit=ImageMagick#p5604
    - https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=37&t=1886&p=5579&hilit=ImageMagick#p5579
    - https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=37&t=1854&p=5575&hilit=ImageMagick#p5575

- If get too far behind, or too frustrated trying to do your own modeling, and look and listen to Webinar at the same time, it is ok to view as Demo and go back and work through Tutorial on your own (or with recordings from this Workshop)

- You must have a concentration layer of 0 in order to get deposition output, even if deposition is included in simulation
- If particle or trajectory goes off end of met grid, it terminates
- Can have multiple met grids – HYSPLIT picks best grid for any given point in simulation
  - Finer grid near source (e.g., 3 km, 12 km, 27 km met data sets...)
  - Coarser grid for more remote (e.g., global 1 degree or even 2.5 deg)
- If your runs are going too slow, reduce particle number from Advanced menu.
  - You won't get the exact same answer, but the runs will go faster.
  - For the purposes of the Workshop, it will be fine in almost all cases to do this
- Can Search HYSPLIT Forum
  - Place + in front of a word that must be found e.g., MESSAGE +PERMISSION +DELETE
  - Place – in front of word that must not be found e.g., MESSAGE +PERMISSION +DELETE –IMAGEMAGICK
  - Use * as wildcard for partial matches
  - Put words separated by | into brackets if only one needs to be found e.g., [CONTROL|SETUP.CFG] + RETRIEVE
- Can download met data for simulations on your computer from READY site


HYSPLIT
NOAA
Air Resources Laboratory
Advancing Atmospheric Science and Technology through Research
ARL Home
HYSPLIT Model
READY
READY News
Transport & Dispersion
Get/Run HYSPLIT
HYSPLIT Tutorials
HYSPLIT Forum
HYSPLIT Workshop
Volcanic Ash
Fukushima TCM
Short-Range Ensemble Dispersion Forecasts
Balloon Flight Forecasting Tools
Locusts
DATEM Tracer Verification
HYSPLIT Modeling Group
Current & Forecast Meteorology
North America
Animations
Archived Meteorology >>
Archived Meteorology
READY
Archived Model Graphics
Choose a forecast location by entering a 3 or 4-character station identifier or a 6-digit WMO index number or a latitude/longitude pair and then click the Continue button, or by clicking on the location in the map. You will be taken to the model products section. Information on ARL's data archive is available at https://www.ready.noaa.gov/archives.php.
Select a Location
Using a Code Identifier
Airport or WMO ID:
Search for Code
OR By Selecting a U.S. or World City
Or choose a city
OR by Latitude & Longitude
Latitude (degrees)
Convert Deg/Min/Sec into Decimal Degrees
Longitude (West < 0)
Continue
Reset
OR click a location on the map below.


ready.noaa.gov/archives.php
Air Resources Laboratory
Advancing Atmospheric Science and Technology through Research
ARL Home
HYSPLIT Model
READY
READY News
Transport & Dispersion
Get/Run HYSPLIT
HYSPLIT Tutorials
HYSPLIT Forum
HYSPLIT Workshop
Volcanic Ash
Fukushima TCM
Short-Range Ensemble Dispersion Forecasts
Balloon Flight Forecasting Tools
Locusts
DATEM Tracer Verification
HYSPLIT Modeling Group
Current & Forecast Meteorology
North America
Animations
Archived Meteorology
North America
Air Quality
U.S Trajectories
Smoke Forecast Verification
Emergency Assistance
RSMC Products
RSMC Information
Internal Use Only
Experimental TCMs (NOAA User, Reg. User)
READY Status
READY Tools
Forecast Data Information
Gridded Meteorological Data Archives
Overview
The National Weather Service's National Centers for Environmental Prediction (NCEP) runs a series of computer analyses and forecasts operationally. NOAA's Air Resources Laboratory (ARL) routinely uses NCEP model data for use in air quality transport and dispersion modeling calculations. In 1989 ARL began to archive some of these datasets for future research studies. ARL has in the past, or is presently archiving the following NCEP datasets, which can be retrieved via ftp by clicking on the name of the dataset.
For further information on model changes see the following web sites:
https://www.nco.ncep.noaa.gov/pmb/
https://www.nco.ncep.noaa.gov/pmb/changes/
https://www.emc.ncep.noaa.gov/modelinfo/index.html
Currently Available Data
NAMS Hybrid sigma-pressure archive (CONUS, Alaska, Hawaii, 2010-)
FTP Data
NOAA ARL FTP Server
Readme file
CONUS grid domain map
Alaska grid domain map
Hawaii grid domain map
Alaska grid domain map (before 03/21/2017)
Hawaii grid domain map (before 03/21/2017)
GDAS one-degree archive (Dec 2004 - present)
FTP Data
NOAA NOMADS Server (recent files only)

Meteorological Datasets Available from NOAA ARL Archives*

(https://ready.arl.noaa.gov/archives.php)

	Dataset	Horizontal Resolution (km- approx.)	Full-grid dimensions	Temporal resolution (hrs)	Vertical Levels	Period of each file	Size of each file (GB)	Total size for one month of data (GB)	Availability
North American**	HRRR-3km	3	1799 x 1059	1	37	¼ day	3.2	390	Jun 2015 -> present
	NAMS-12km Hybrid	12 km: Conus 12 km: Alaska 2 km: Hawaii		1	40	1 day	1.0 0.64 0.71	30 19 21	2010 -> present
	NAM-12km	12	614 x 428	3	27	1 day	0.395	12	May 2007 -> present
	WRF-ARW-27km	27	216 x 174	1	35	1 day	0.210	6.4	**1980 -> present**
	NARR-32km	32	309 x 237	3	24	1 month	2.8	2.8	**1979 -> 2019**
	EDAS-40km	40	185 x 129	3	27	½ month	0.6	1.2	2004 -> 2018
Global	GFS - 0.25°	27	1440 x 721	3	56	1 day	2.7	82	Jun 2019 -> present
	GDAS - 0.5°	55	720 x 361	3	56	1 day	0.468	14	Sep 2007 -> Jun 2019
	GDAS - 1°	111	360 x 181	3	24	1 week	0.571	2.5	Dec 2004 -> present
	Global Reanalysis - 2.5°	278	144 x 73	6	18	1 month	0.11	0.11	1948 -> present

* These are the most commonly used datasets, but there are other datasets available in the archive, ** All North American datasets cover the Continental United States, but have varying coverage of Canada, Mexico, and adjacent oceanic regions. *** WRF-27km data will most likely continue to be updated.

Thanks to the

IT Team and the **HYSPLIT Team**

of the NOAA Air Resources Laboratory for providing behind-the-scenes support throughout this Workshop

...we will try our best to answer all of your questions, but we ask for your patience, as there are 100's of people in this Workshop and only a few of us...

Course Instructor

Roland Draxler

NOAA Air Resources Laboratory (retired)

Day 3 Wrap-Up Slides

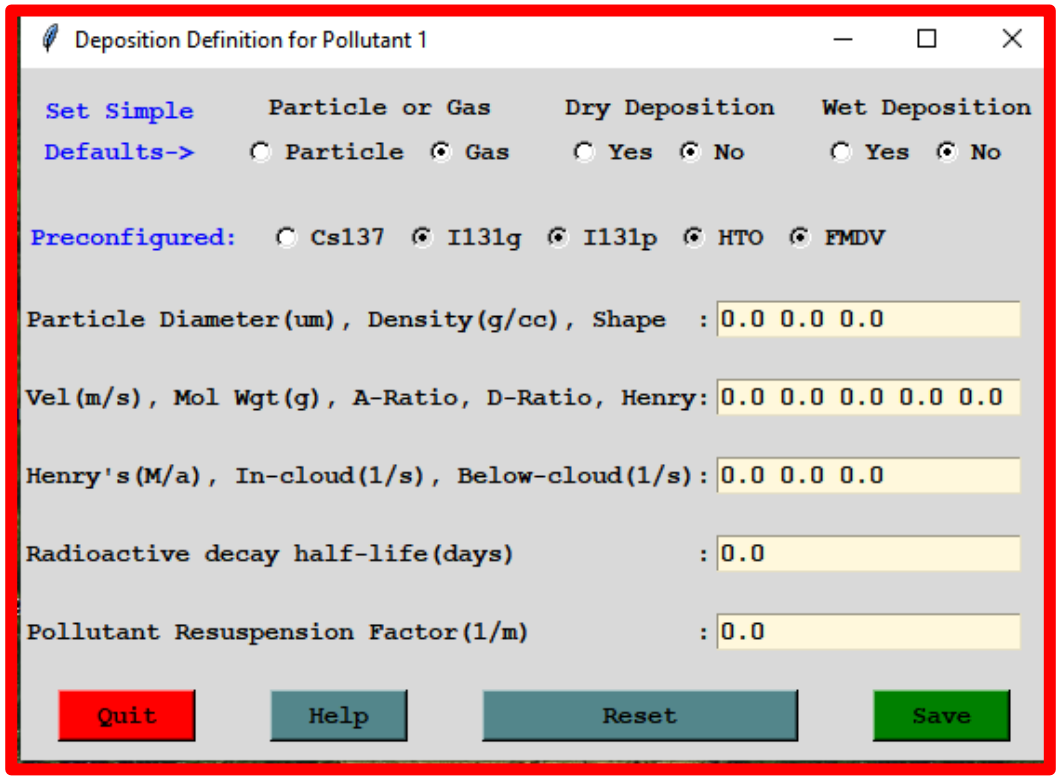
Problem with Ensemble Runs

- The team working in the HYSPLIT Forum today worked on trying to figure out what was happening with the Ensemble runs in the Tutorial Section 12.
- They just figured it out!
  - The Unregistered version of the model for the PC had a compilation error, and it was not configured properly. So, it couldn't work.
  - The Registered version for the PC was ok.
  - Both Registered and Unregistered versions for the MAC were ok.
- So, we will fix the error, and post the corrected Unregistered PC version as soon as we can.
- Sorry about this! But as you see, we make mistakes sometimes too, even though we have pretty elaborate testing procedures to try to ensure that things are basically working before we release any new version.

Key Point – the model results can vary with different assumptions and inputs..

- This is important to know and think about whether or not you do a full scale ensemble analysis
- It's always good to do some "extra" runs where you vary one or more parameters to see how the results change, e.g.,
  - use different met data sets as inputs
  - use different starting heights for back-trajectories
  - use different number of particles for concentration simulations
    - … keep increasing particle number until results don't change.. you want to find "sweet spot" where you don't have too many so run goes too slow, vs. too few so concentration grid output is too patchy
    - there is no perfect answer that works for all situations… you need to find a good choice for the situation you are modeling… depends on horizontal and vertical concentration grid resolution, met data, distance between source and receptors, …

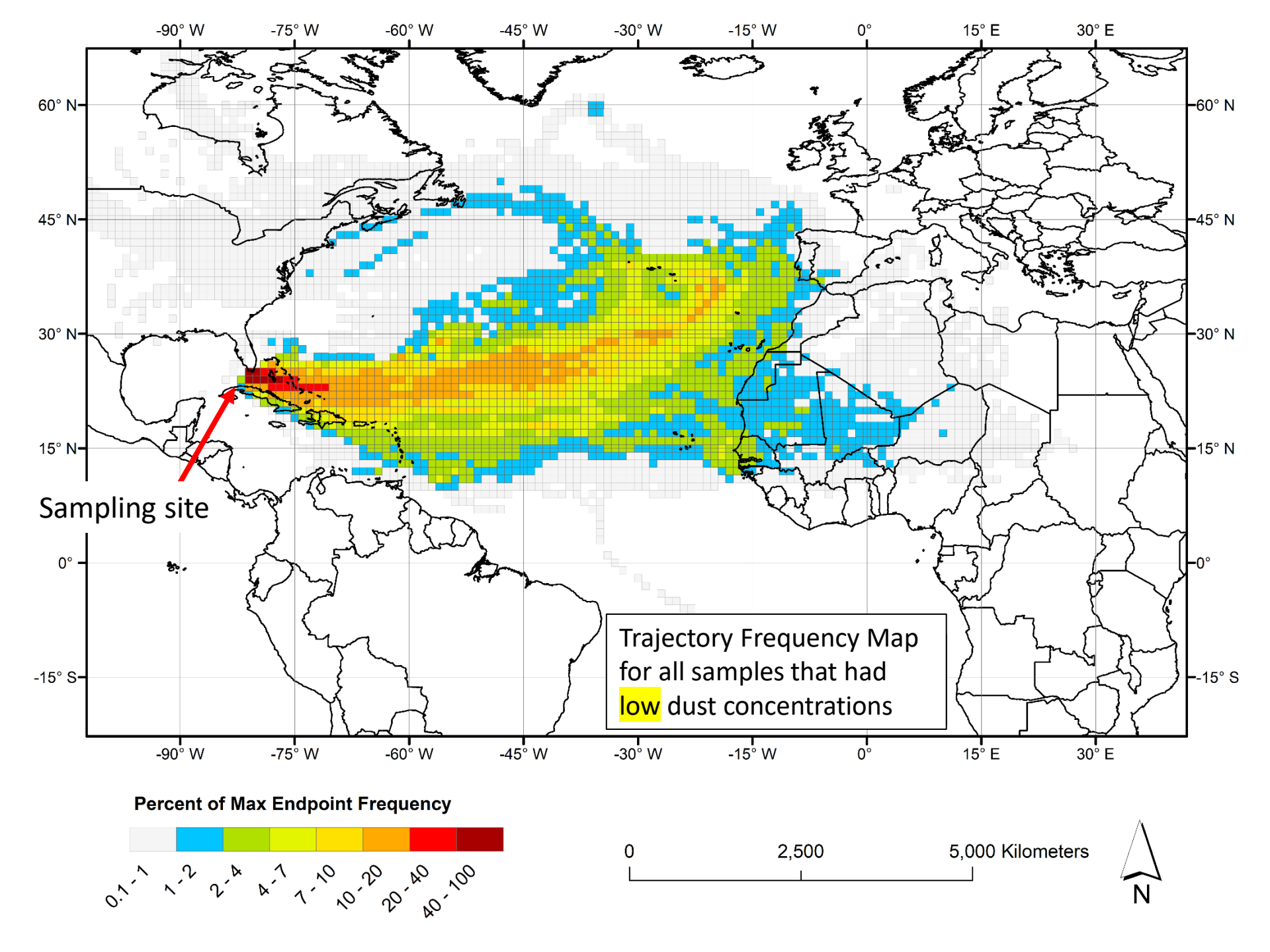
Buttons at the top of the Deposition Definition Menu



- The particle vs. gas buttons and dry vs. wet buttons at the top of the deposition menu just pre-populate some of the fields below with values that might be typical.
- It can give you a hint about what values you need to consider.
- But, anything you do further in the menu will over-ride anything you did at first by pressing any of those buttons at the top.
- When HYSPLIT does the run, it doesn't look for whether the top-level buttons are pushed, but only for the values set in the menu below the button.

Different ways to do source attribution

- Approaches range from relatively qualitative to relatively quantitative
- Suppose you have a series of measurements at a given monitoring site.
- And you run a back trajectory from the site for each measurement.
  - You can take all of the trajectories associated with high measured values and create a frequency plot (section 6.1 of Tutorial)
  - You can take all of the trajectories associated with low measured values and create a frequency plot (section 6.1 of Tutoriial)
- The difference in geographical patterns between the two maps can tell you something about source attribution
- Note that these were generated by outputting text-file data and inporting into ArcGIS (…you can create your own graphics…)


-90° W
-75° W
-60° W
-45° W
-30° W
-15° W
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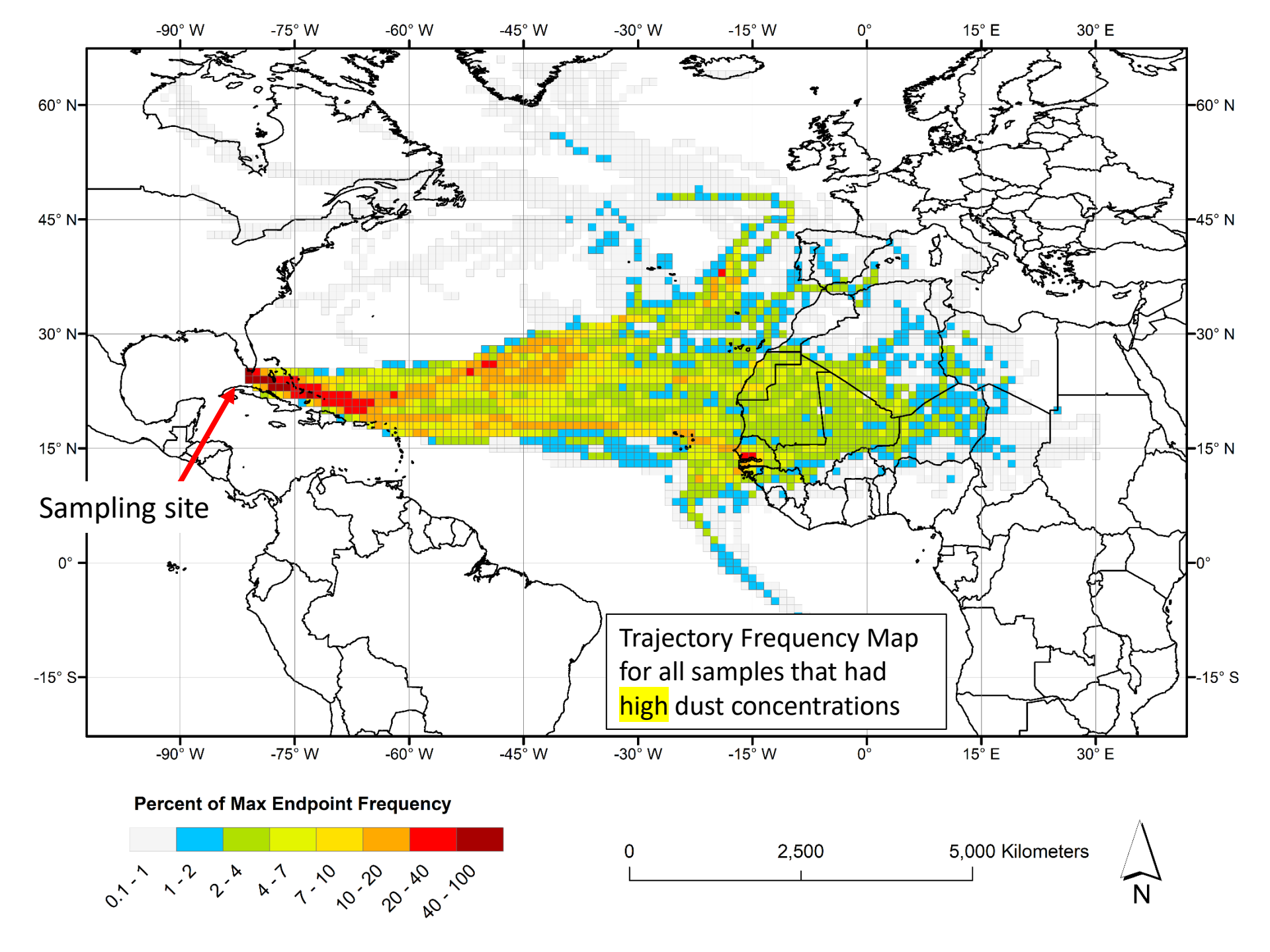
60° N
45° N
30° N
15° N
0°
-15° S
Sampling site
Trajectory Frequency Map for all samples that had low dust concentrations
Percent of Max Endpoint Frequency
0.1 - 1
1 - 2
2 - 4
4 - 7
7 - 10
10 - 20
20 - 40
40 - 100
0
2,500
5,000 Kilometers
N


-90° W
-75° W
-60° W
-45° W
-30° W
-15° W
0°
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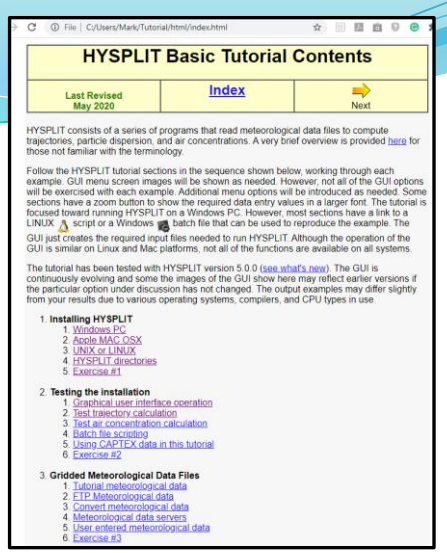
30° E
60° N
45° N
30° N
15° N
0°
-15° S
Sampling site
Trajectory Frequency Map for all samples that had high dust concentrations
Percent of Max Endpoint Frequency
0.1 - 1
1 - 2
2 - 4
4 - 7
7 - 10
10 - 20
20 - 40
40 - 100
0
2,500
5,000 Kilometers
N

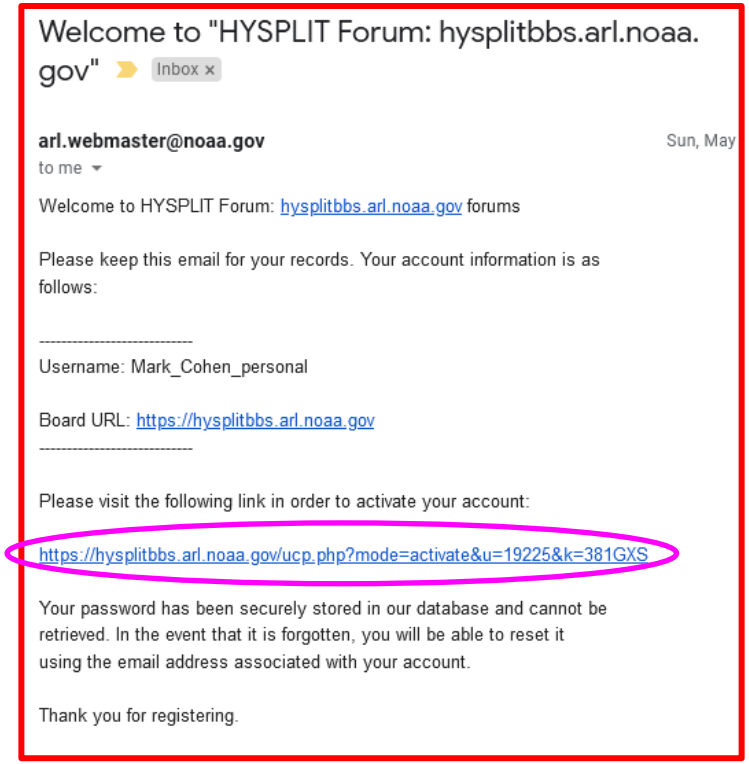
A few more tips and tricks, based on questions from today



- Good to have Tutorial up on your computer, so you can see steps and screen shots, even if you miss something that Roland did... If you downloaded Tutorial, you open it up by opening the index.html file in the root Tutorial directory.

- Can look at files size(s) of files in your Working directory. Sometimes this will give you a useful clue as to what happened. If a file is too big or too small, at least you know that something happened in producing that file...

- Forum registration: You will get an email to activate your account right away. If you don't get it, maybe you entered your email wrong in the registration? Or it ended up in Junk Mail? And if you get it, you have to click on link in email to activate your account.



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More Detailed Logistics Information

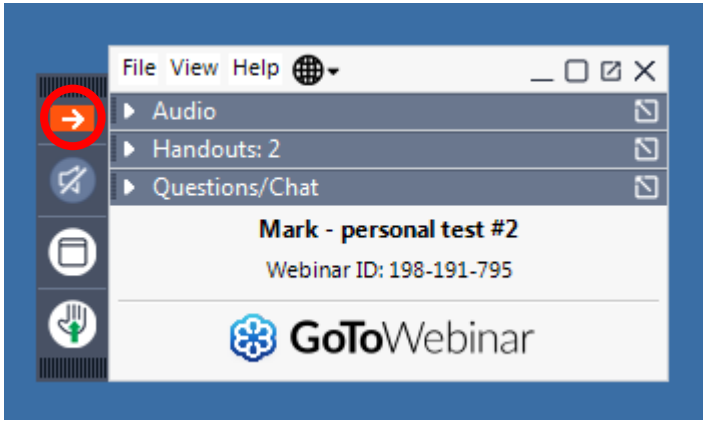
Logistics:

Using the Go-to-Webinar Interface

...this short section about the Go-to-Webinar Interface is only relevant if you are live-streaming the Workshop, but not if you are viewing a recording...

Using the Go-to-Webinar Interface

Click the red arrow to toggle between hidden and not-hidden



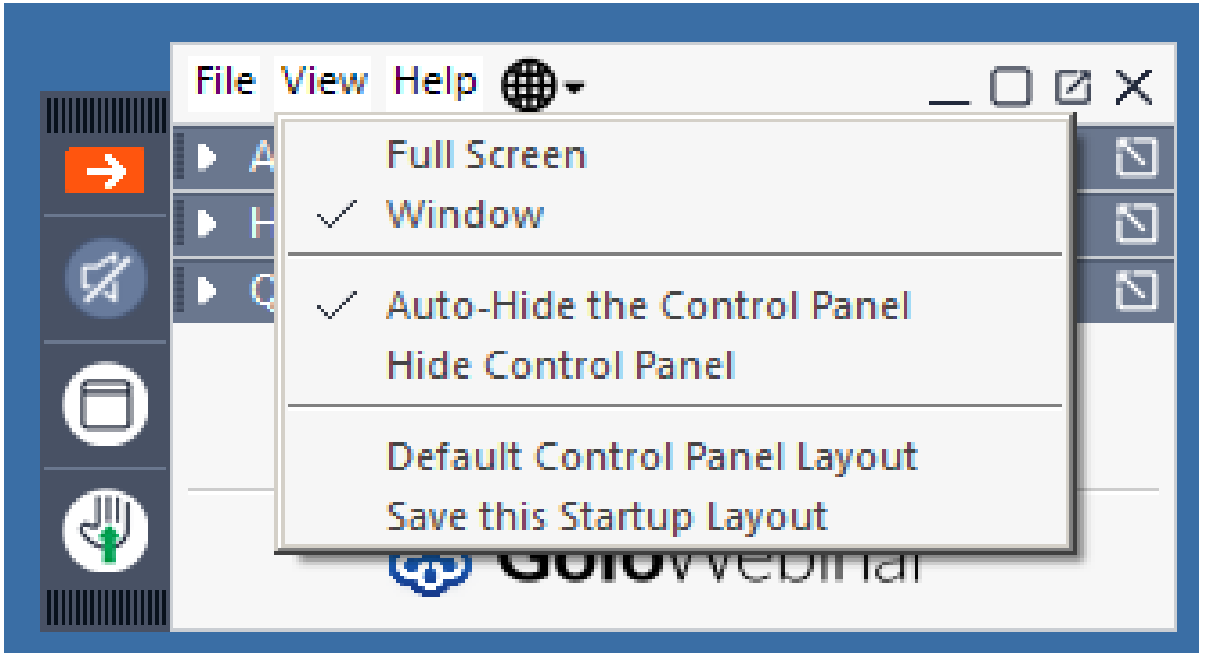
If the Go-to-Webinar Control Panel is hidden (minimized) it will look like this

If not hidden, the Go-to-Webinar Control Panel will look something like this

Using the Go-to-Webinar Interface

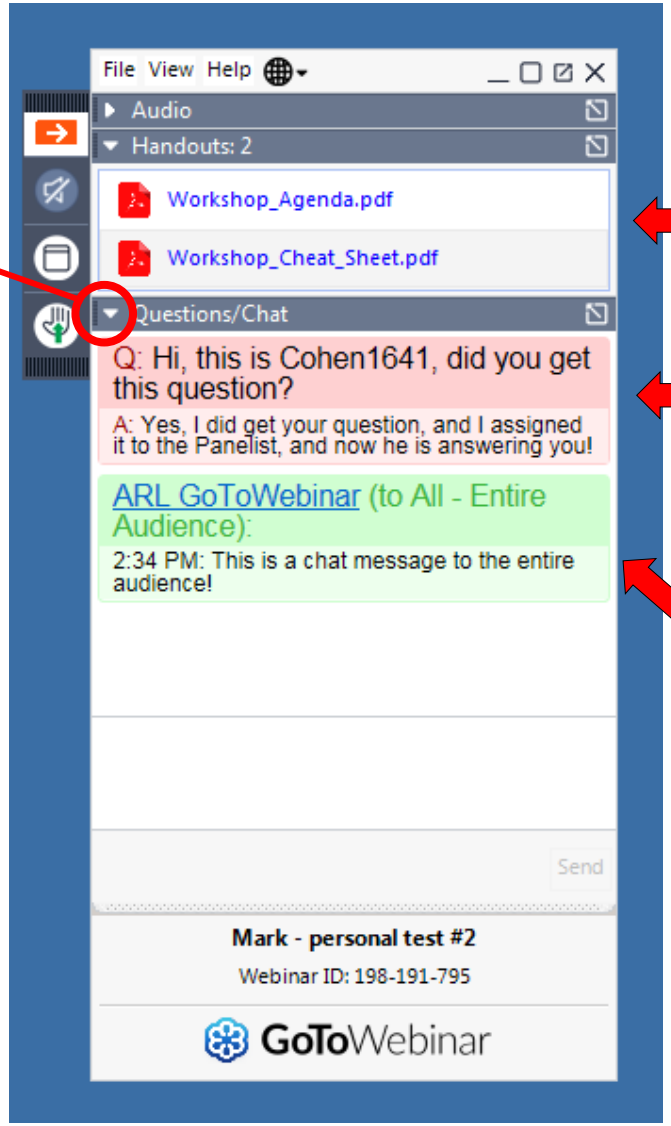
Use the View drop-down menu, for example:

- ✓ **to autohide control panel or not**
- ✓ **to restore the basic default layout if something disappears**



Using the Go-to-Webinar Interface

By toggling the little triangle by each Control Panel section, you can expand it or contract it

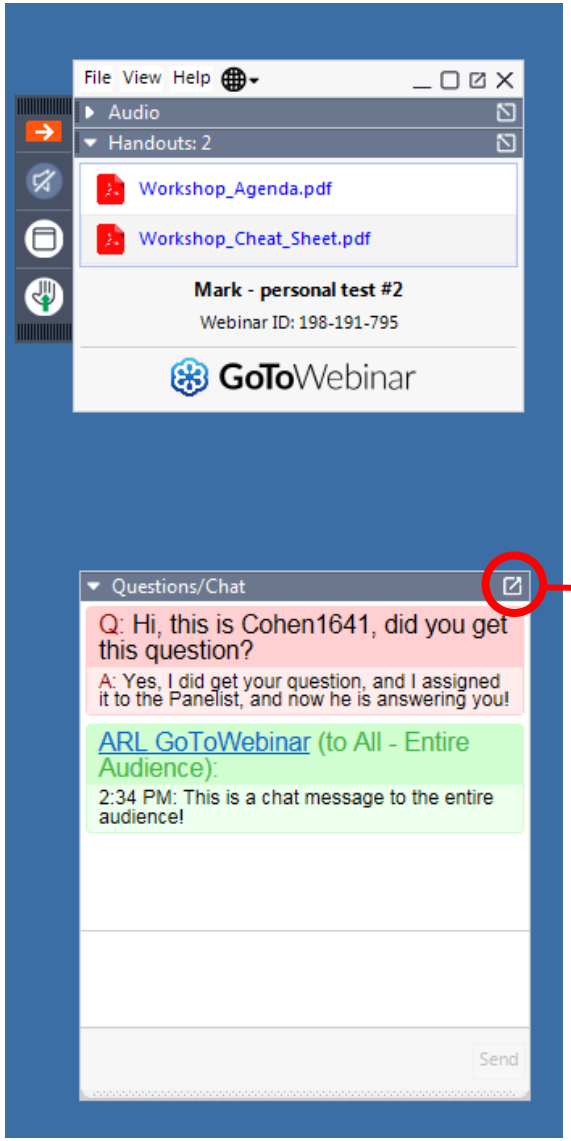


We will put important handouts in this section

When you ask questions of the staff, your questions and answers will be shown in this section

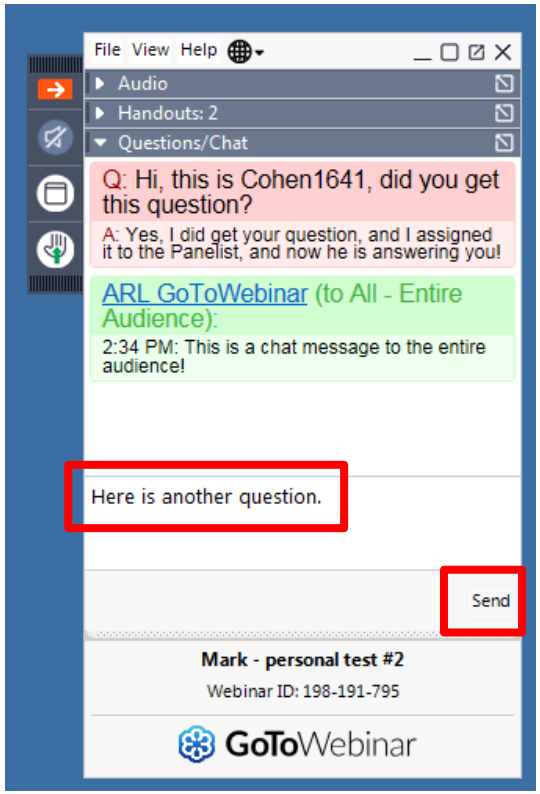
Or when the staff sends the audience a message, you will also see it here

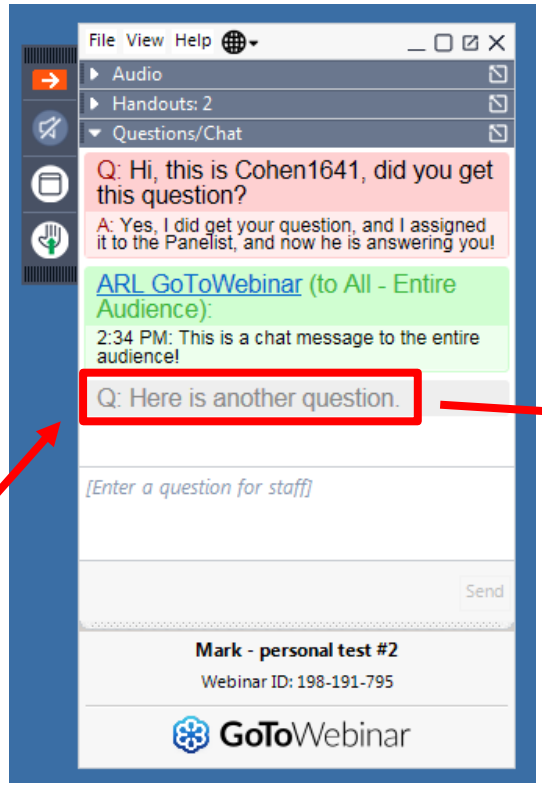
Using the Go-to-Webinar Interface

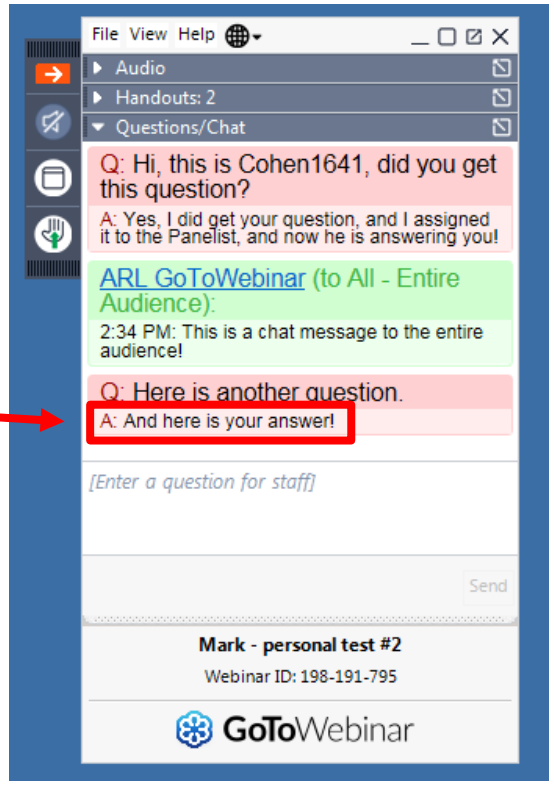


By toggling the little box in the upper right-hand corner of a given section, you can undock it or redock it

Using the Go-to-Webinar Interface







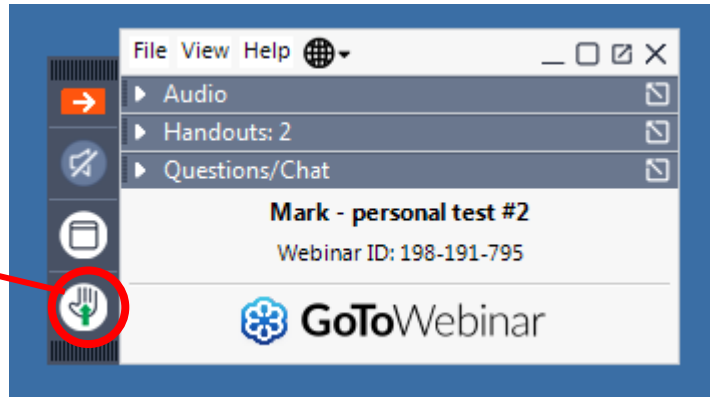
To ask a question, you type in the empty box, and then hit "send"

The question you asked should then show up in *your* Control Panel

When we answer it, the answer will show up in *your* Control Panel

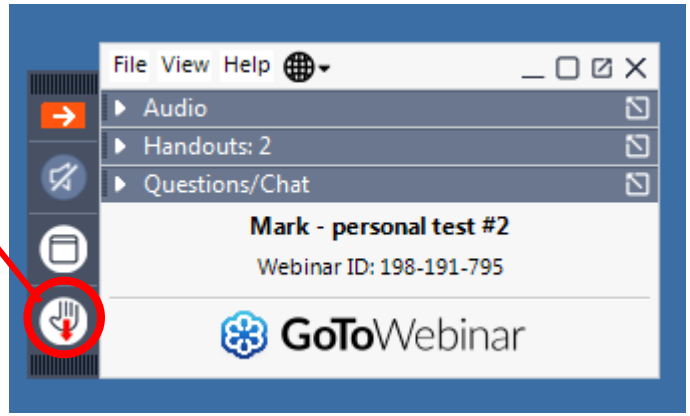
Using the Go-to-Webinar Interface

Sometimes we will ask for a show of hands on a particular question. You click the little hand icon to raise your hand



To lower your hand, you click again on the same icon.

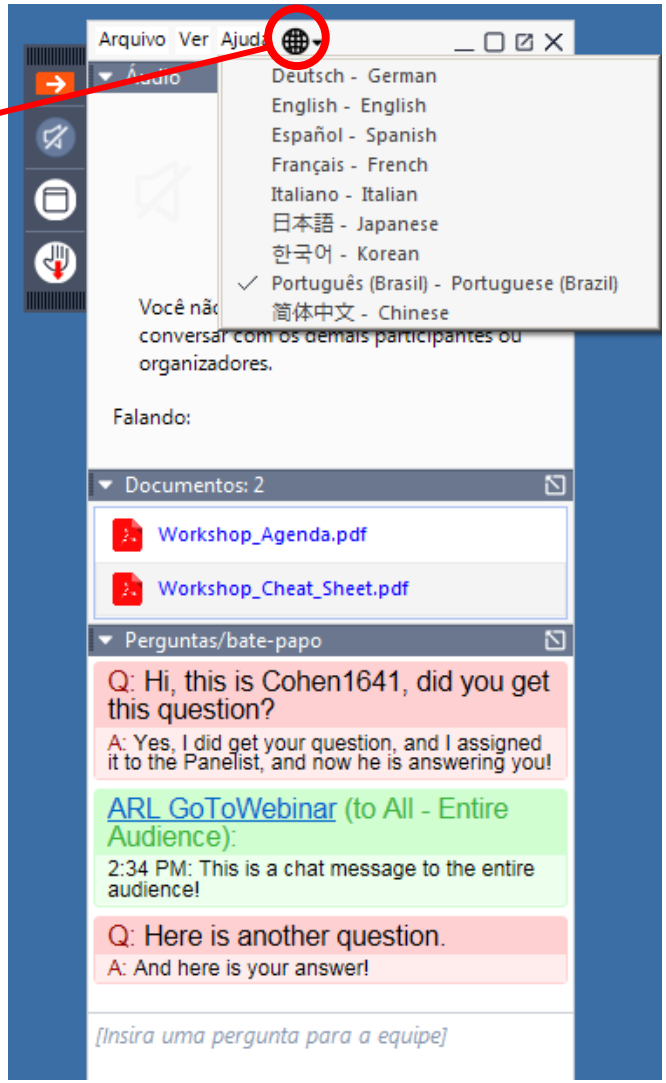
Normally, after we get the answers, we will automatically lower everyone's hand



You are in listen-only mode, so you don't raise your hand to ask a question.

Using the Go-to-Webinar Interface

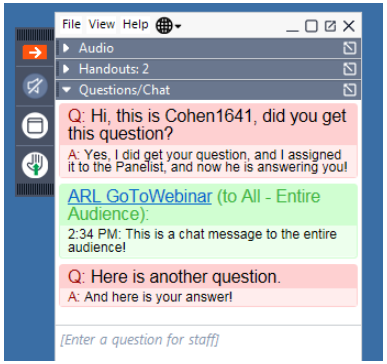
You can click on the "globe" icon to change the language of the Control Panel. Although Questions and Answers will be in English



Logistics:

Asking Questions

Asking Questions



- Ask general questions about the Webinar or Go-to-Webinar in the Control Panel that was just discussed

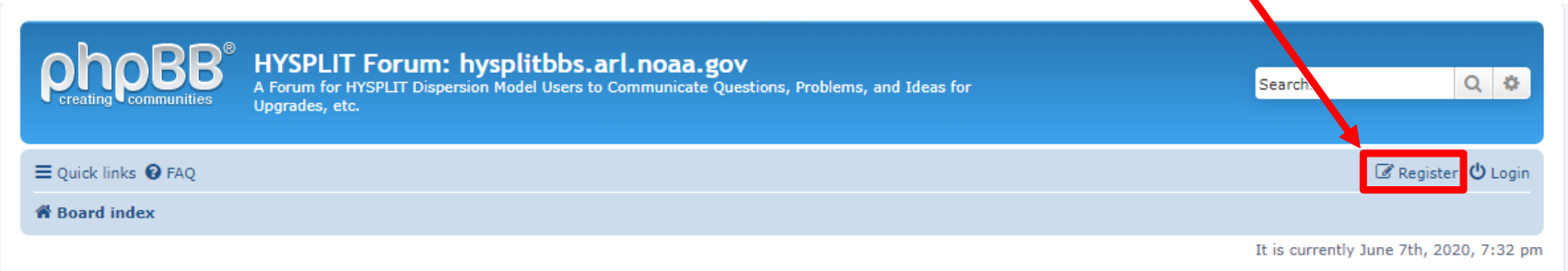
...if viewing a recording, can ask general questions by emailing **arl.gotowebinar@noaa.gov**

- Ask questions about HYSPLIT, the Graphical User Interface (GUI), and the Tutorial in the HYSPLIT Forum

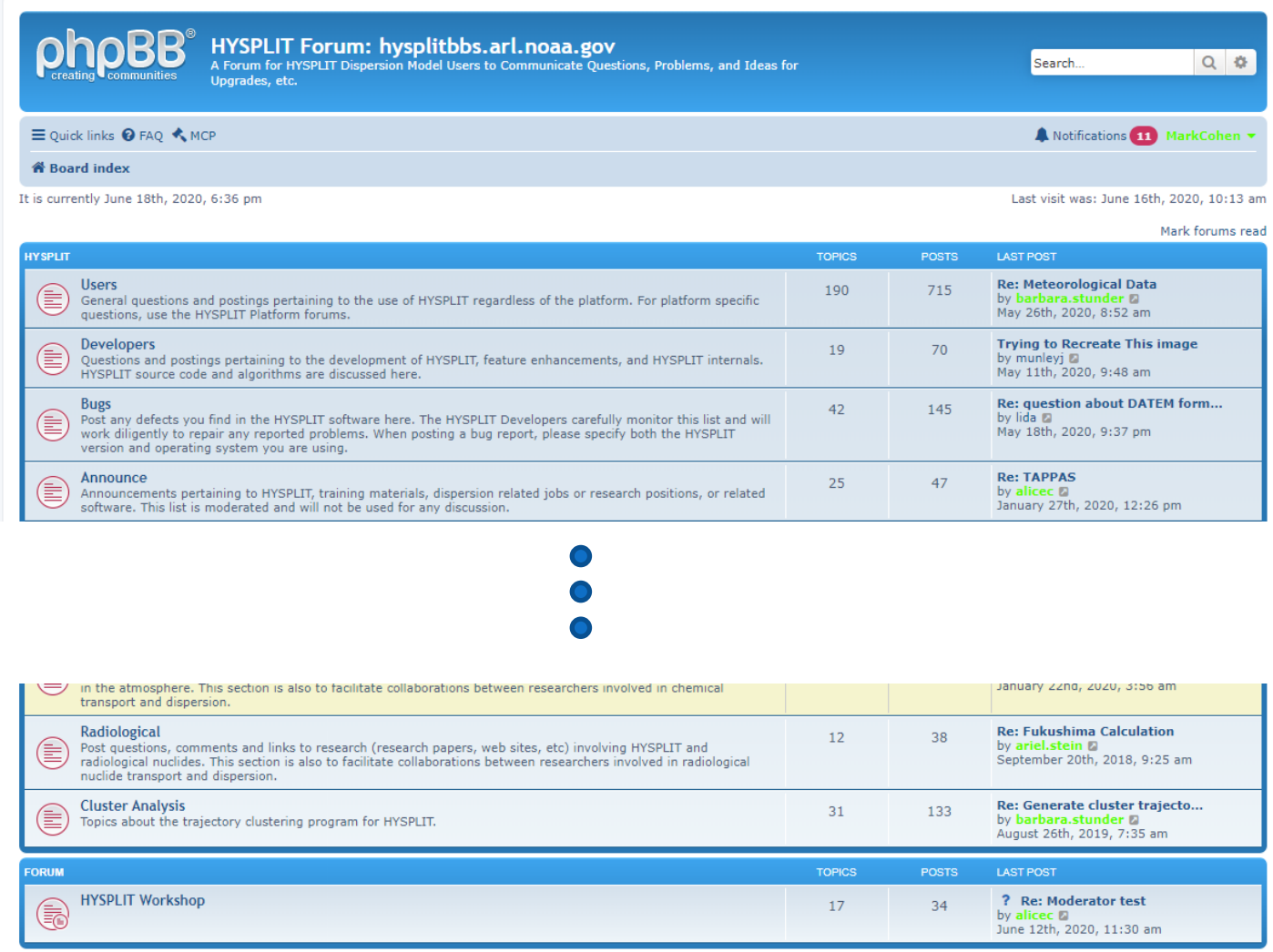
https://hysplitbbs.arl.noaa.gov/viewforum.php?f=36

Asking Questions

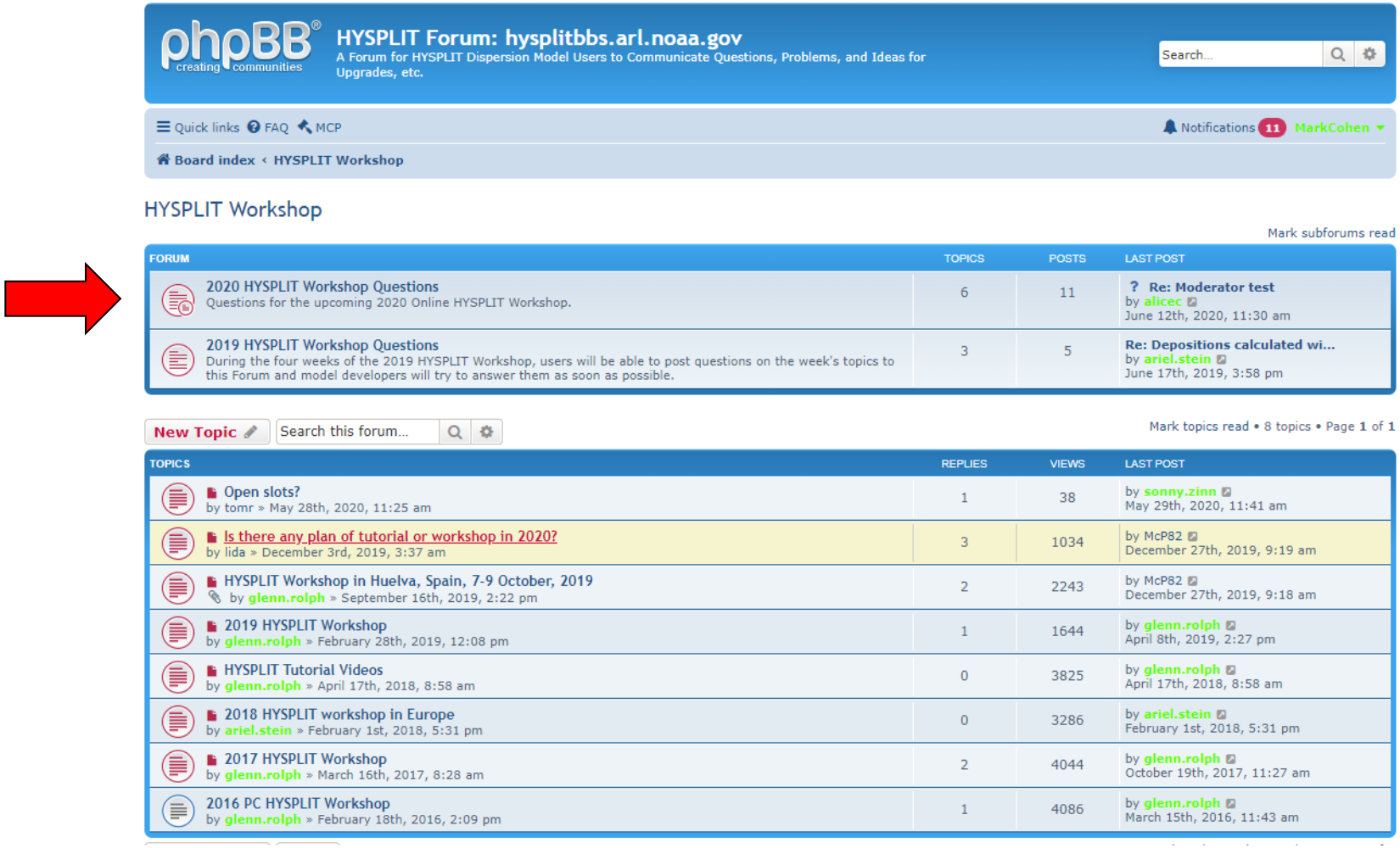
If you have not already registered for the HYSPLIT Forum, you can do so easily by clicking on the "Register" icon at https://hysplitbbs.arl.noaa.gov/



Asking Questions



Asking Questions



phpBB creating communities

HYSPLIT Forum: hysplitbbs.arl.noaa.gov

A Forum for HYSPLIT Dispersion Model Users to Communicate Questions, Problems, and Ideas for Upgrades, etc.

Search...

Quick links FAQ MCP

Notifications 11 MarkCohen

Board index ‹ HYSPLIT Workshop

HYSPLIT Workshop

Mark subforums read

FORUM	TOPICS	POSTS	LAST POST
2020 HYSPLIT Workshop Questions Questions for the upcoming 2020 Online HYSPLIT Workshop.	6	11	? Re: Moderator test by alicec June 12th, 2020, 11:30 am
2019 HYSPLIT Workshop Questions During the four weeks of the 2019 HYSPLIT Workshop, users will be able to post questions on the week's topics to this Forum and model developers will try to answer them as soon as possible.	3	5	Re: Depositions calculated wi... by ariel.stein June 17th, 2019, 3:58 pm

New Topic | Search this forum...

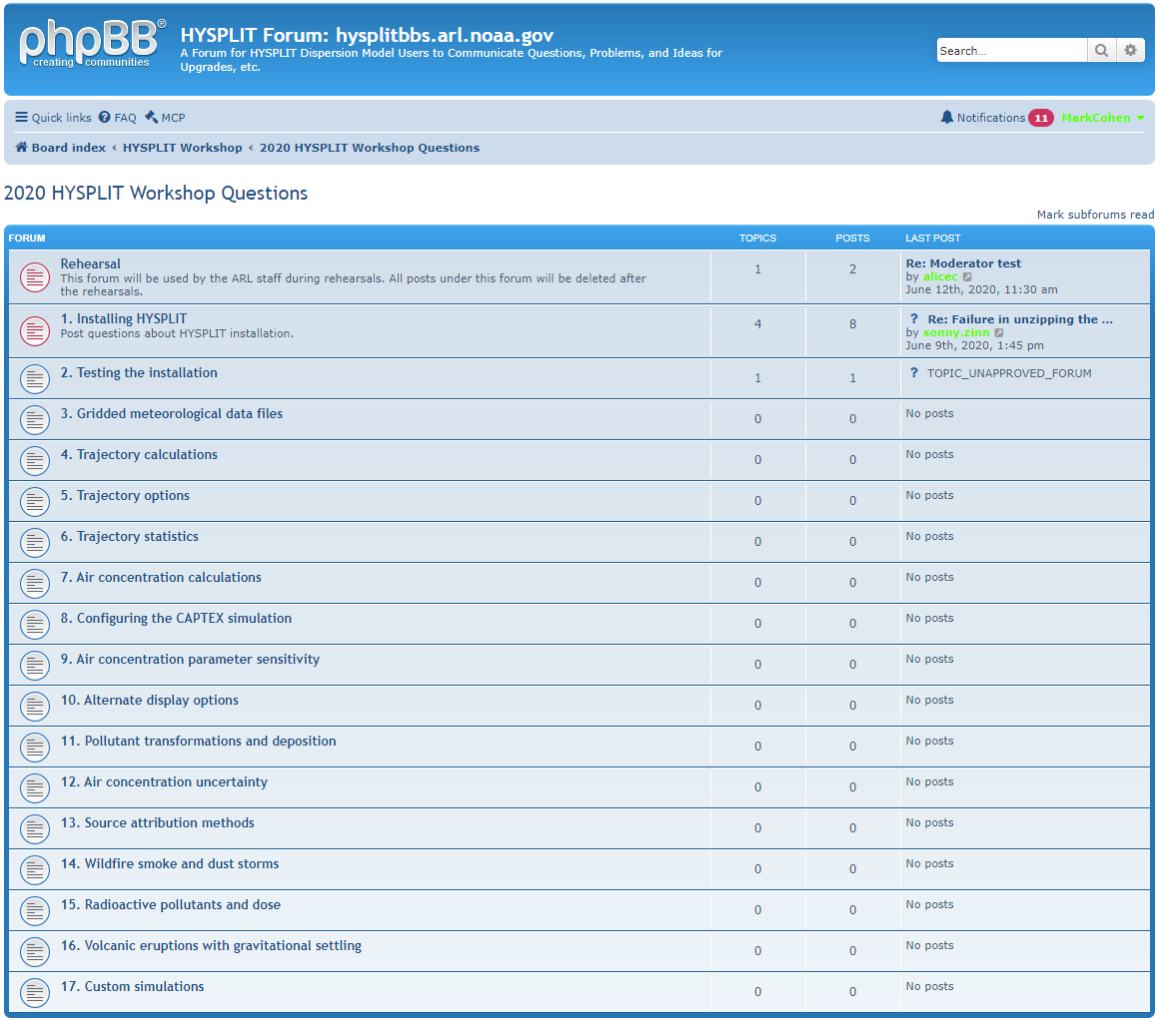
Mark topics read • 8 topics • Page 1 of 1

TOPICS	REPLIES	VIEWS	LAST POST
Open slots? by tomr » May 28th, 2020, 11:25 am	1	38	by sonny.zinn May 29th, 2020, 11:41 am
Is there any plan of tutorial or workshop in 2020? by lida » December 3rd, 2019, 3:37 am	3	1034	by McP82 December 27th, 2019, 9:19 am
HYSPLIT Workshop in Huelva, Spain, 7-9 October, 2019 by glenn.rolph » September 16th, 2019, 2:22 pm	2	2243	by McP82 December 27th, 2019, 9:18 am
2019 HYSPLIT Workshop by glenn.rolph » February 28th, 2019, 12:08 pm	1	1644	by glenn.rolph April 8th, 2019, 2:27 pm
HYSPLIT Tutorial Videos by glenn.rolph » April 17th, 2018, 8:58 am	0	3825	by glenn.rolph April 17th, 2018, 8:58 am
2018 HYSPLIT workshop in Europe by ariel.stein » February 1st, 2018, 5:31 pm	0	3286	by ariel.stein February 1st, 2018, 5:31 pm
2017 HYSPLIT Workshop by glenn.rolph » March 16th, 2017, 8:28 am	2	4044	by glenn.rolph October 19th, 2017, 11:27 am
2016 PC HYSPLIT Workshop by glenn.rolph » February 18th, 2016, 2:09 pm	1	4086	by glenn.rolph March 15th, 2016, 11:43 am

Asking Questions

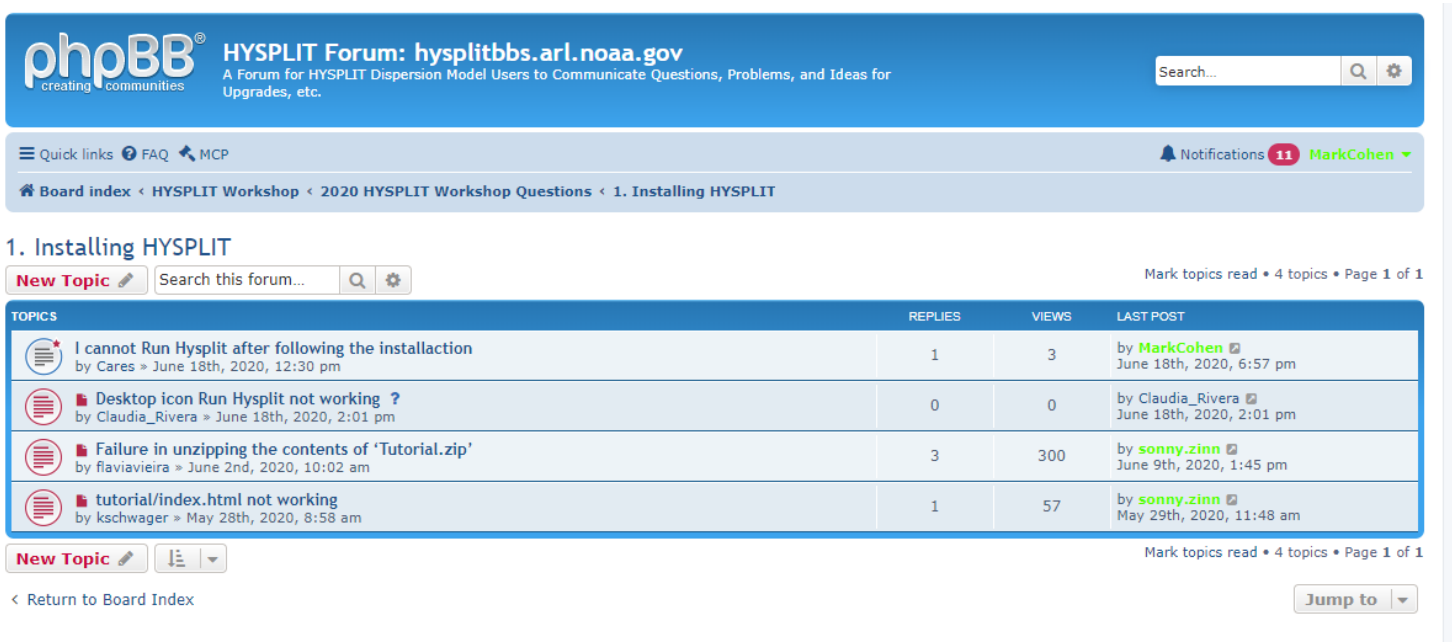
https://hysplitbbs.arl.noaa.gov/viewforum.php?f=36

You can post your question in the appropriate section, based on where in the Tutorial your question refers to.

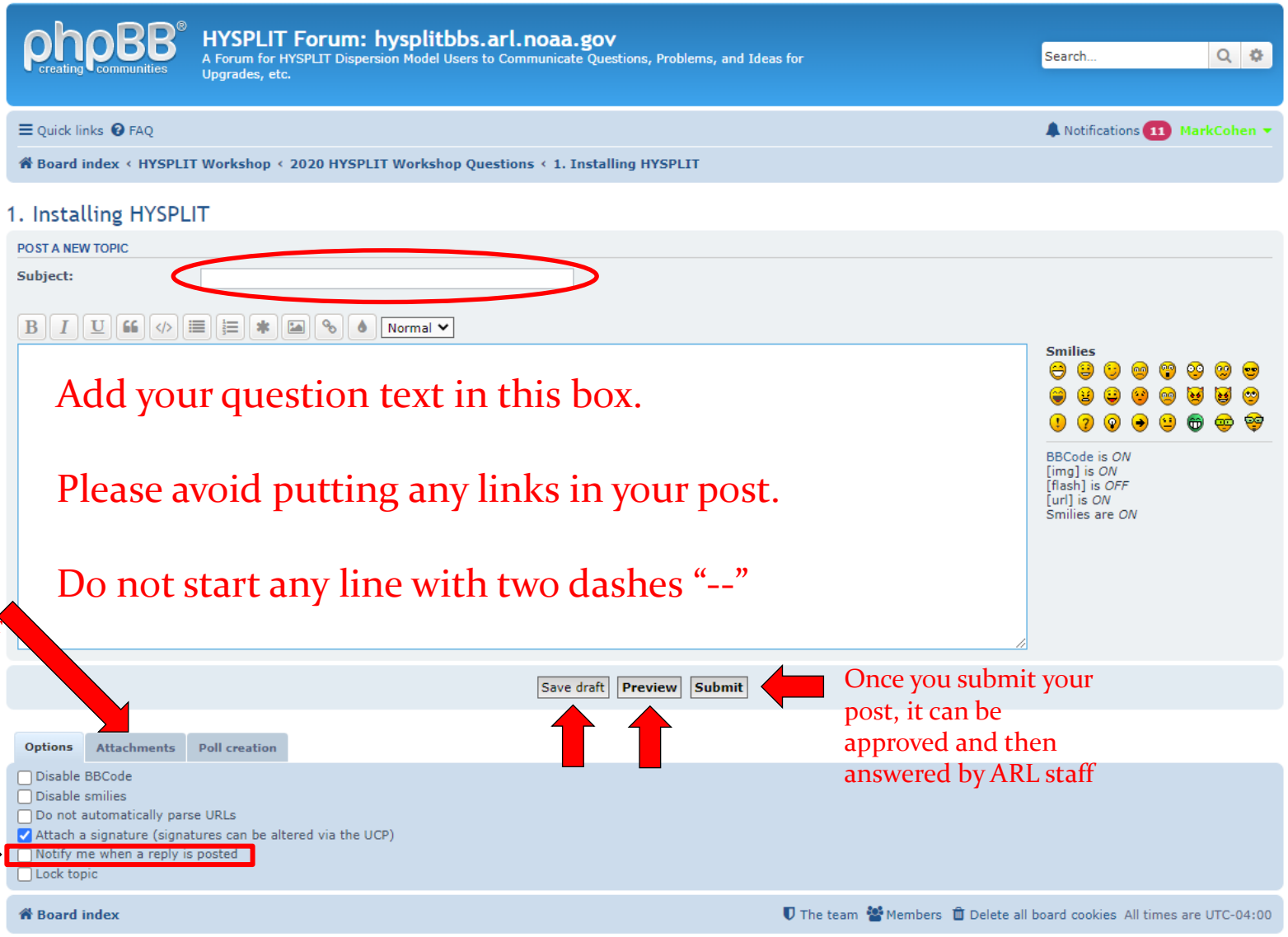


Asking Questions

You can look to see if there already is a similar question, and if not, you can create a New Topic



Asking Questions

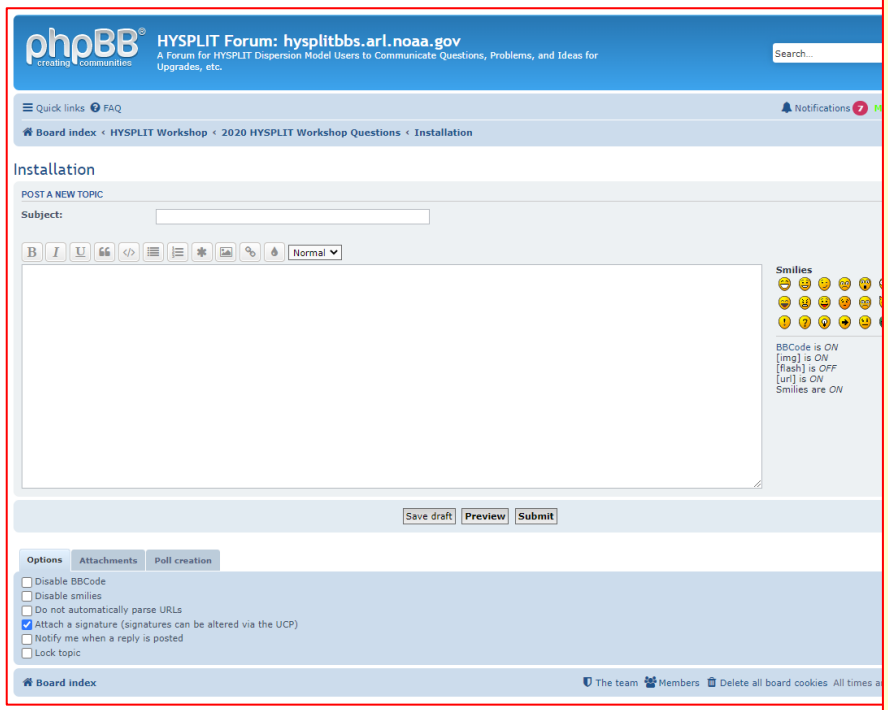


you can add attachments, e.g., one or more screen shots, and/or a CONTROL file and/or a SETUP.CFG file

Once you submit your post, it can be approved and then answered by ARL staff

Asking Questions

Why are we asking to use the HYSPLIT Forum for GUI and model-related questions?

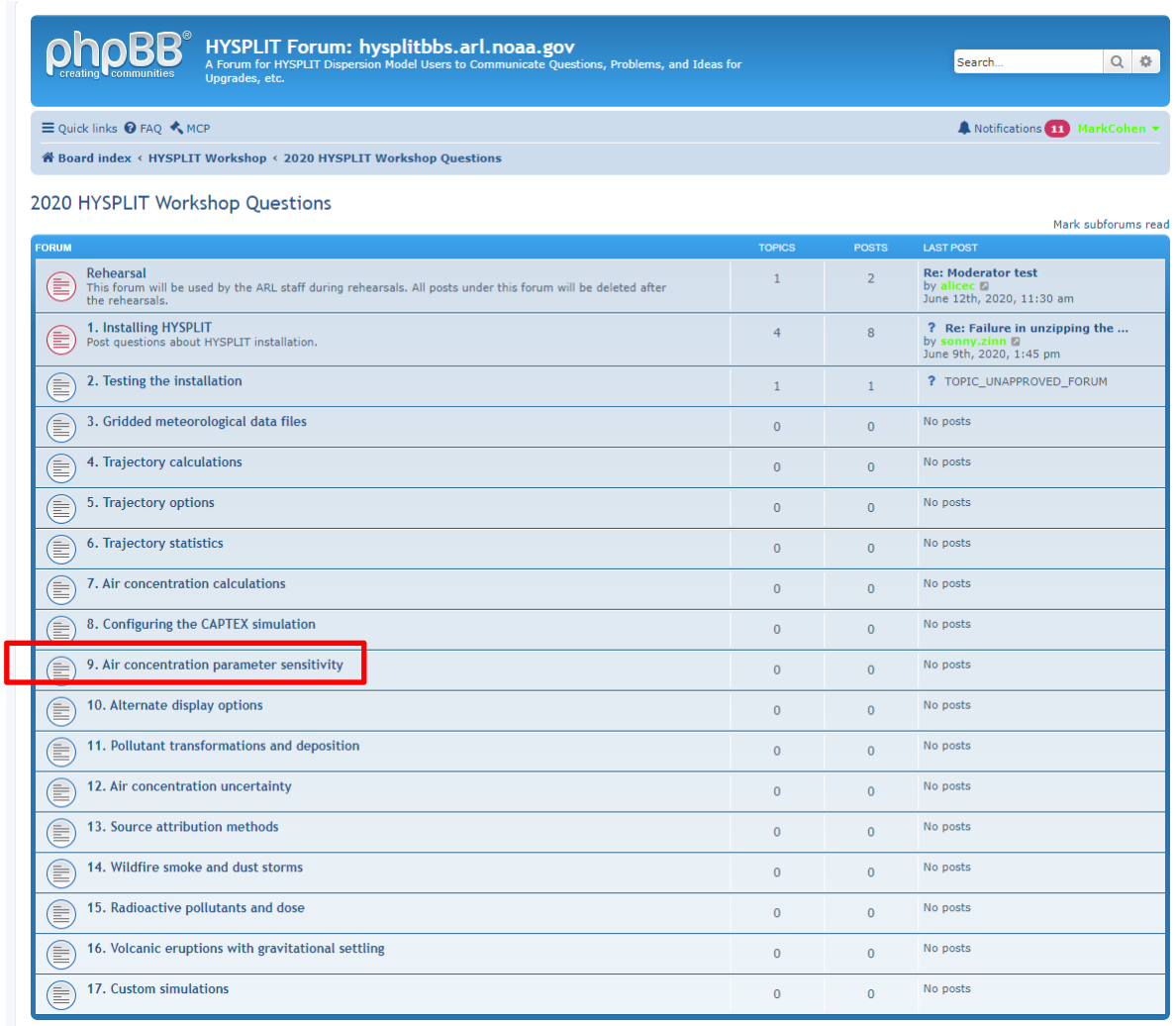


- You can ask more detailed questions, e.g., can attach screen shots and/or various input/output files
- We can provide more detailed answers
- There can be an exchange back and forth, if needed
- Can see other questions that have already been asked – in case you have a similar question
- We can give you a link to the answer to a similar question
- Accessible to people just viewing the recordings
- As part of the HYSPLIT community, we hope you will use the Forum moving forward

Asking Questions

https://hysplitbbs.arl.noaa.gov/viewforum.php?f=36

You can post your question in the appropriate section, based on where in the Tutorial your question refers to.

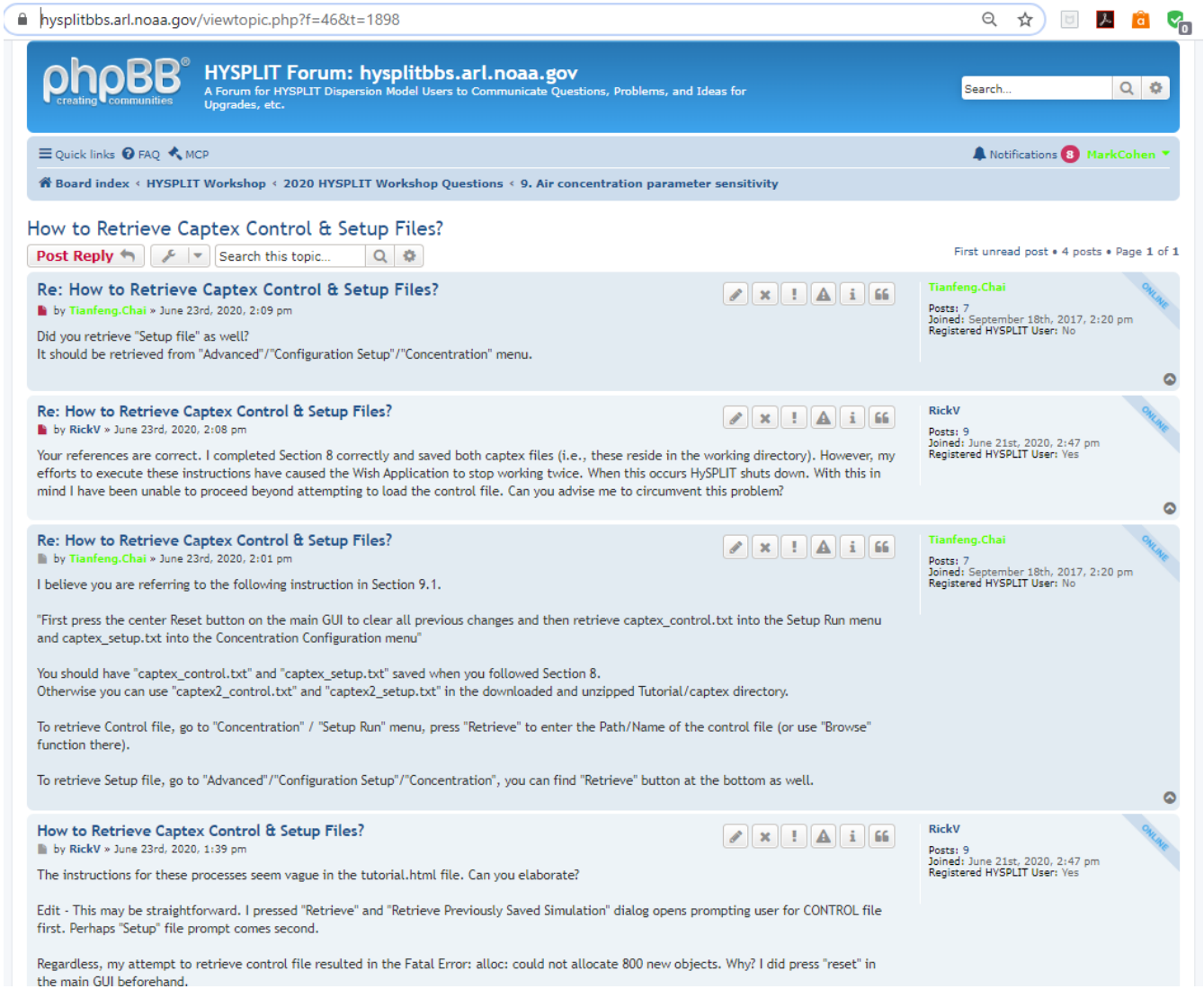


Asking Questions

https://hysplitbbs.arl.noaa.gov/viewforum.php?f=46

https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=46&t=1898

Asking Questions



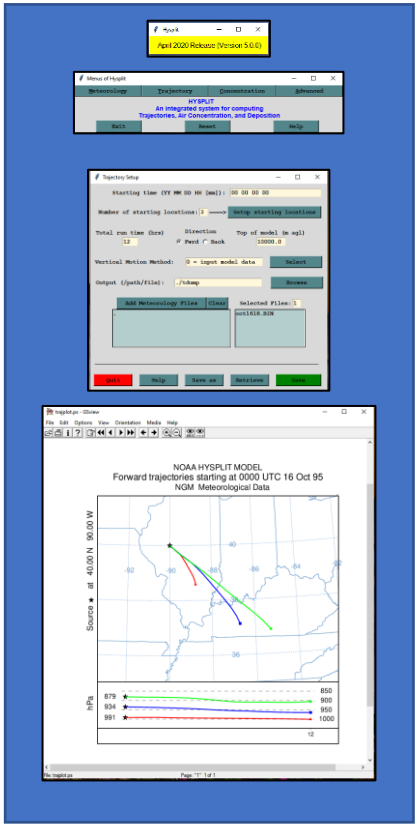
Asking Questions

https://hysplitbbs.arl.noaa.gov/viewtopic.php?f=3&t=1261&p=3529&hilit=permission+to+delete#p3529

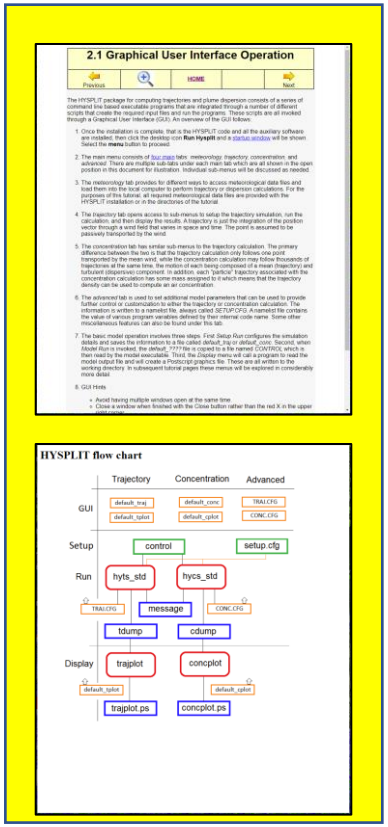
Screen Considerations

Screen Considerations

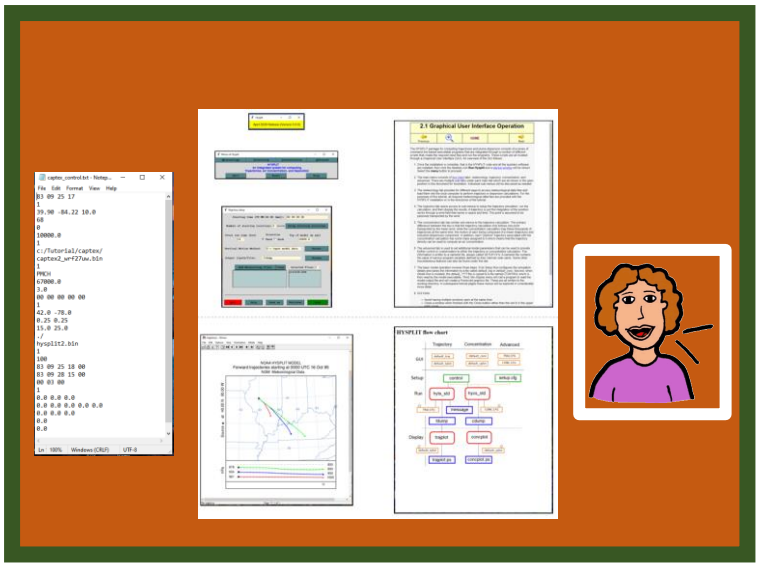
Screen area devoted to your *own* hands-on HYSPLIT modeling



Screen area devoted to your *own* viewing of Tutorial



Screen area devoted to viewing the Webinar



We recommend that a 2nd screen be used, if this is possible, e.g., to display the Workshop Webinar video. In this way, the participant can carry out their hands-on HYSPLIT work, in conjunction with the Workshop, and still conveniently view the ongoing, associated instructions.

Recordings

Recordings

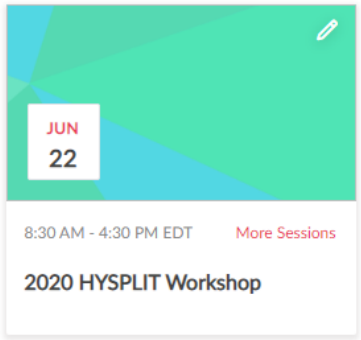
Access recordings from the Workshop Web Page:
https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php

- Recordings of each day's on-line sessions are being created, *but processing takes significant time* (~8+ hours *after* a day's session ends)
- Two identical versions:
  - HYSPLIT Workshop Channel (hosted by Go-to-Webinar)
    - Click Video > Go-to-Webinar registration > Enter name & email > View video
  - Workshop Web Page – once the video is posted on our site, the corresponding item in the list below will turn into a link you can click to view
    - ***Day 1 video recording***
    - Placeholder for Day 2 video recording
    - Placeholder for Day 3 video recording
    - Placeholder for Day 4 video recording

Recordings

HYSPLIT Workshop Channel

hosted by Go-to-Webinar



While video is processing, it will show up in "Live/Upcoming" section. It cannot be viewed yet.

Once it is ready for viewing, it will show up in "Recently Added" section.

Virtual Posters

Virtual Posters

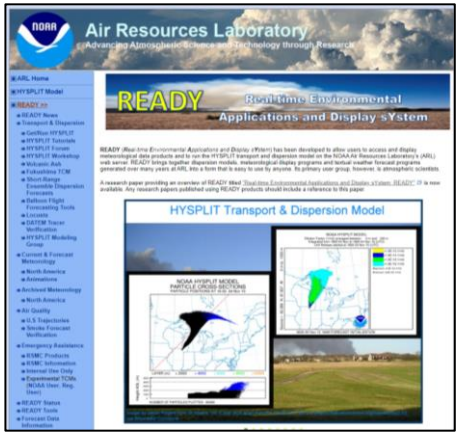
Access posters from the Workshop Web Page:
https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php

- Ryan, R., K. Kelleher, N. Murphy, and C. Burbidge, 2020: The use of HYSPLIT by the Environmental Protection Agency (Ireland) to predict the transportation of smoke and Cs-137 from wildfires near the Chernobyl Nuclear Power Plant.
- Ionov, D., 2020: Application of HYSPLIT to simulate urban pollution plume generated by the megacity of St. Petersburg, Russia.
- Baraldo, F. and Coauthors, 2020: PM 2.5 chemical composition in Buenos Aires by an ensemble of analytical techniques.
- Diemoz, H., T. Magri, G. Pession, C. Tarricone, I. Tombolato, and M. Zublena, 2020: Applications of backtrajectory analyses at the Alpine site of Aosta, Italy.
- Preciado, M., E. Solarte, A. Pena, and C. Galindez, 2020: Monitoring the behavior of atmospheric aerosols during a biomass burning event.

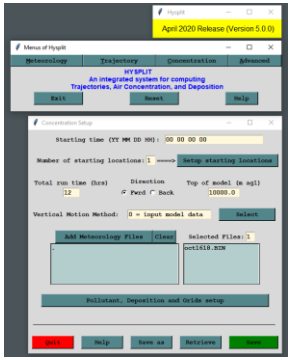
Other Topics

Different Ways to Use HYSPLIT

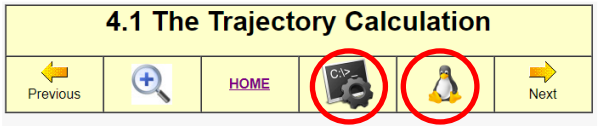
Different Ways to Use HYSPLIT



1. **Online - READY Website:** https://www.ready.noaa.gov/index.php
   - Specialized applications (e.g., Volcanoes, Fires, Locusts, ...)
   - Researcher access; public access
   - Can use met data directly on our servers, without downloading it
2. **Download model (free) and run on your local computer using the Graphical User Interface (GUI)**
   - This Workshop deals almost exclusively with the GUI
   - Menu driven, context sensitive help, integrated applications
   - Can generally do more with the GUI than you can online, as we have imposed some limitations due to computational resource constraints
   - Download (free) forecast and archive met data to run HYSPLIT



3. **Use the same model you downloaded to run on your local computer using the Command Line (terminal) and scripts**
   - At a basic level, a script is just a series of command line entries
   - More features available from command line / scripts than in GUI
   - Re-do runs by re-running a script; easy to change parameters
   - And you have a record of exactly what you did.
   - *But the GUI is a great way to learn how to use HYSPLIT.* Most experienced users will use the GUI when trying something new, and only try a script once they understand what is happening in the GUI.




```
echo "$syr $smo $sda $shr     " >CONTROL
echo "1                       ">>CONTROL
echo "$olat $olon $olvl       ">>CONTROL
echo "$run                    ">>CONTROL
echo "0                       ">>CONTROL
echo "$ztop                   ">>CONTROL
echo "1                       ">>CONTROL
echo "$MET/                   ">>CONTROL
echo "$data                   ">>CONTROL
echo "$OUT/                   ">>CONTROL
echo "tdump                   ">>CONTROL
```

A little bit more about the READY site

https://www.ready.noaa.gov/index.php

ready.noaa.gov/index.php

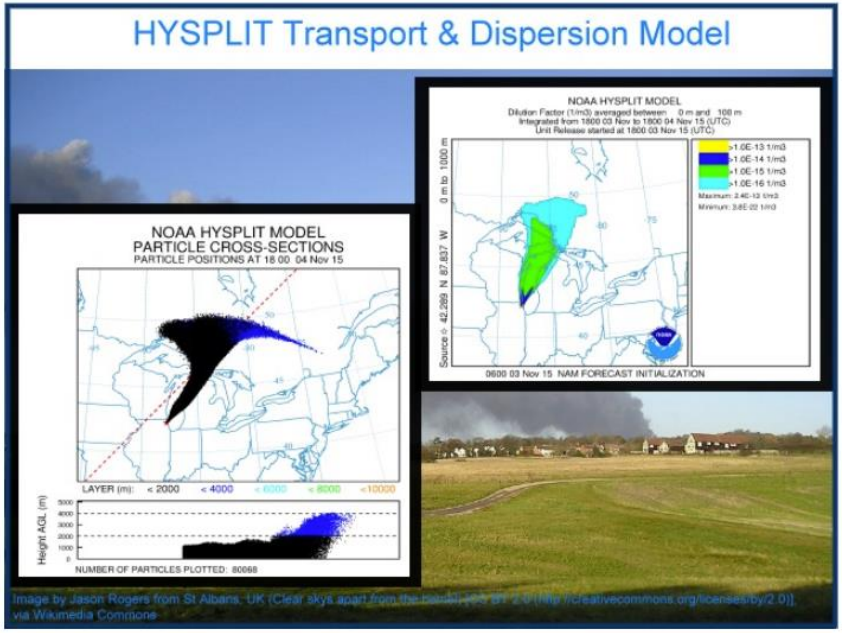
Air Resources Laboratory
Advancing Atmospheric Science and Technology through Research

- ARL Home
- HYSPLIT Model
- READY >>
  - READY News
  - Transport & Dispersion
    - Get/Run HYSPLIT
    - HYSPLIT Tutorials
    - HYSPLIT Forum
    - HYSPLIT Workshop
    - Volcanic Ash
    - Fukushima TCM
    - Short-Range Ensemble Dispersion Forecasts
    - Balloon Flight Forecasting Tools
    - Locusts
    - DATEM Tracer Verification
    - HYSPLIT Modeling Group
  - Current & Forecast Meteorology
    - North America
    - Animations
  - Archived Meteorology
    - North America
  - Air Quality
    - U.S Trajectories
    - Smoke Forecast Verification
  - Emergency Assistance
    - RSMC Products
    - RSMC Information
    - Internal Use Only
    - Experimental TCMs (NOAA User, Reg. User)
  - READY Status
  - READY Tools
  - Forecast Data Information

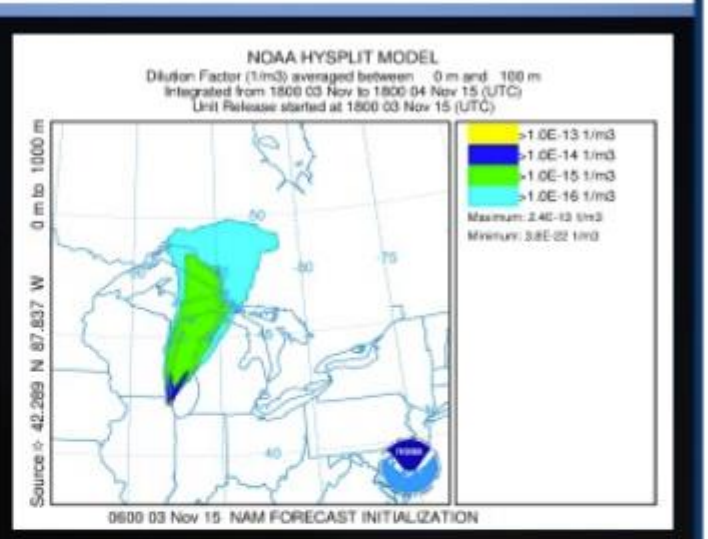
READY
Real-time Environmental Applications and Display sYstem

READY (*Real-time Environmental Applications and Display sYstem*) has been developed to allow users to access and display meteorological data products and to run the HYSPLIT transport and dispersion model on the NOAA Air Resources Laboratory's (ARL) web server. READY brings together dispersion models, meteorological display programs and textual weather forecast programs generated over many years at ARL into a form that is easy to use by anyone. Its primary user group, however, is atmospheric scientists.

A research paper providing an overview of READY titled "Real-time Environmental Applications and Display sYstem: READY" is now available. Any research papers published using READY products should include a reference to this paper.



HYSPLIT Transport & Dispersion Model



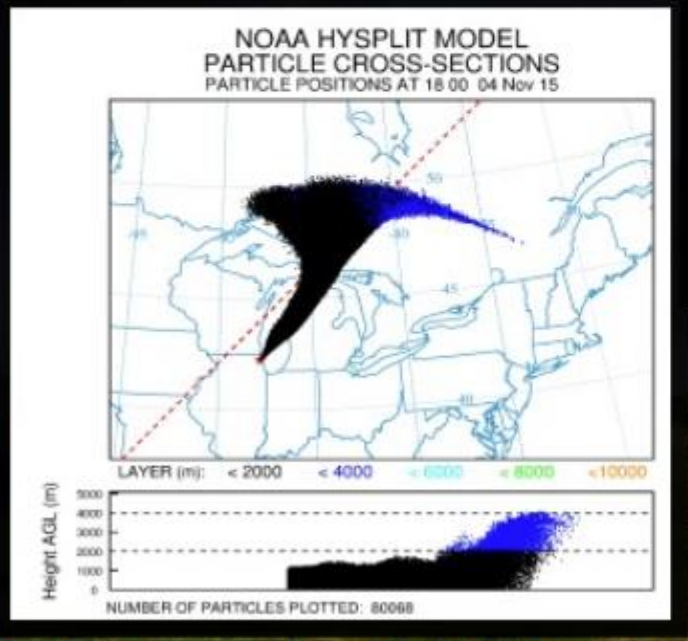
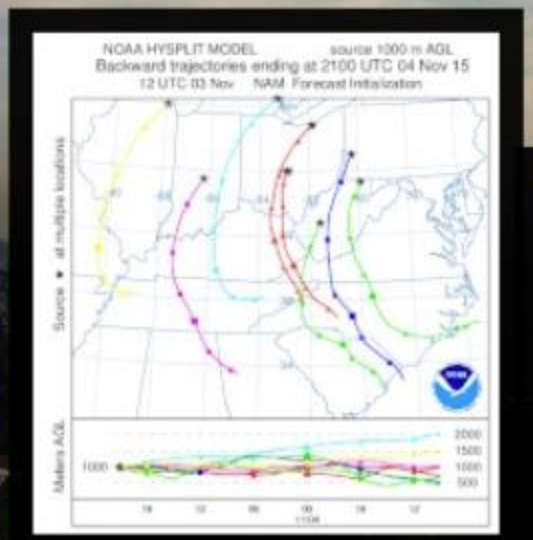
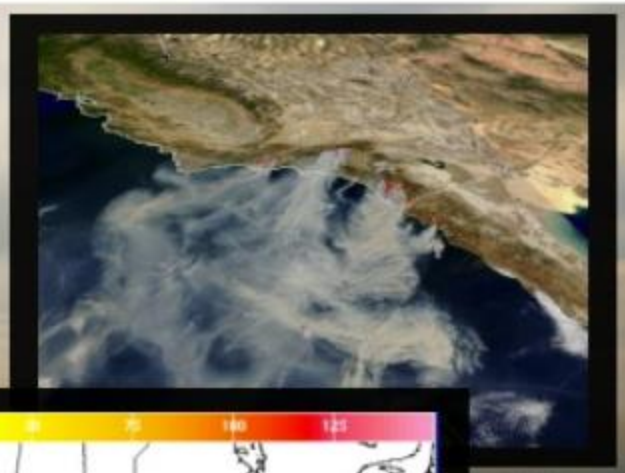


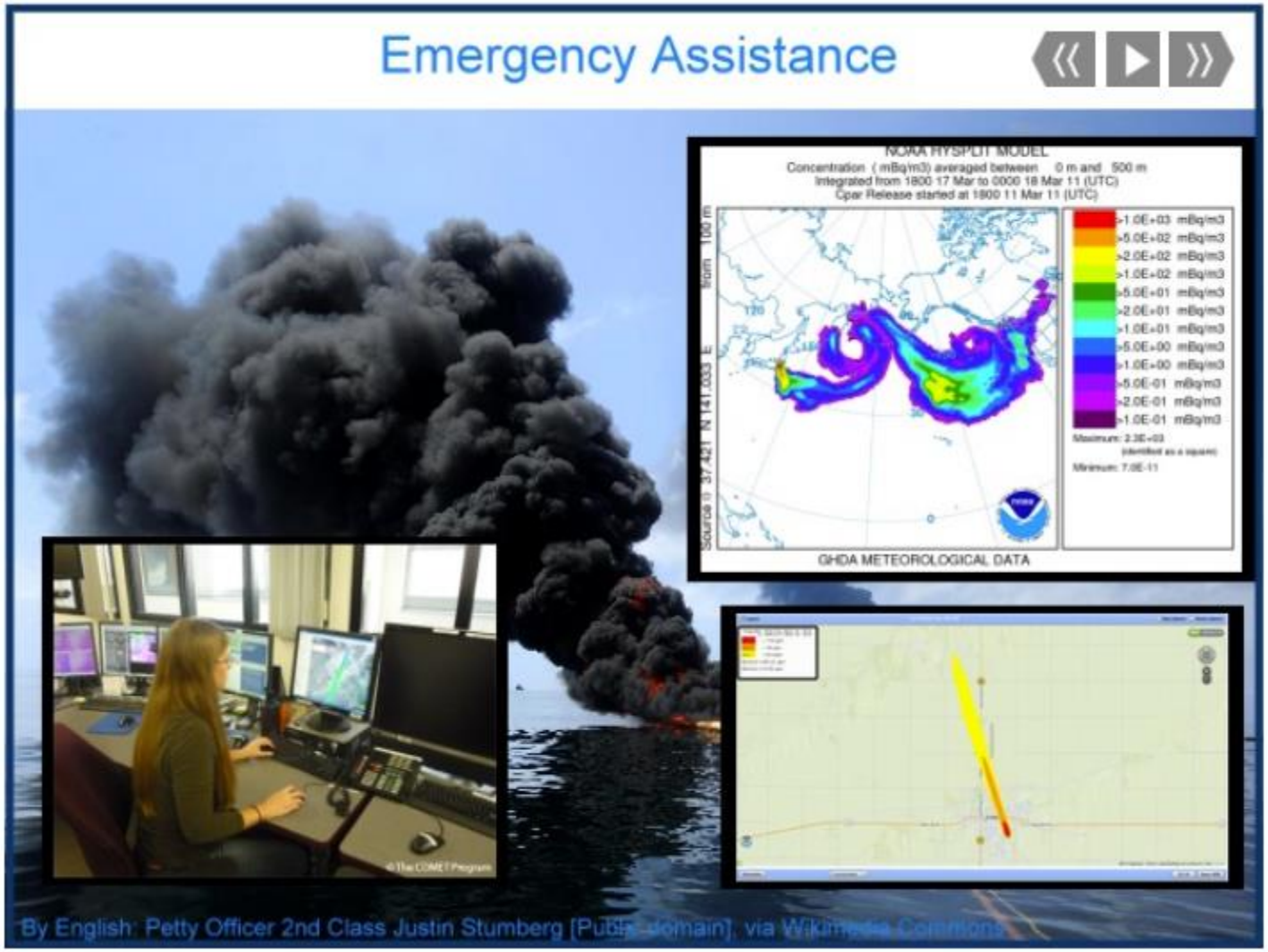
Image by Jason Rogers from St Albans, UK (Clear skys apart from the [illegible]) [CC BY 2.0 (http://creativecommons.org/licenses/by/2.0)], via Wikimedia Commons

Air Quality Products



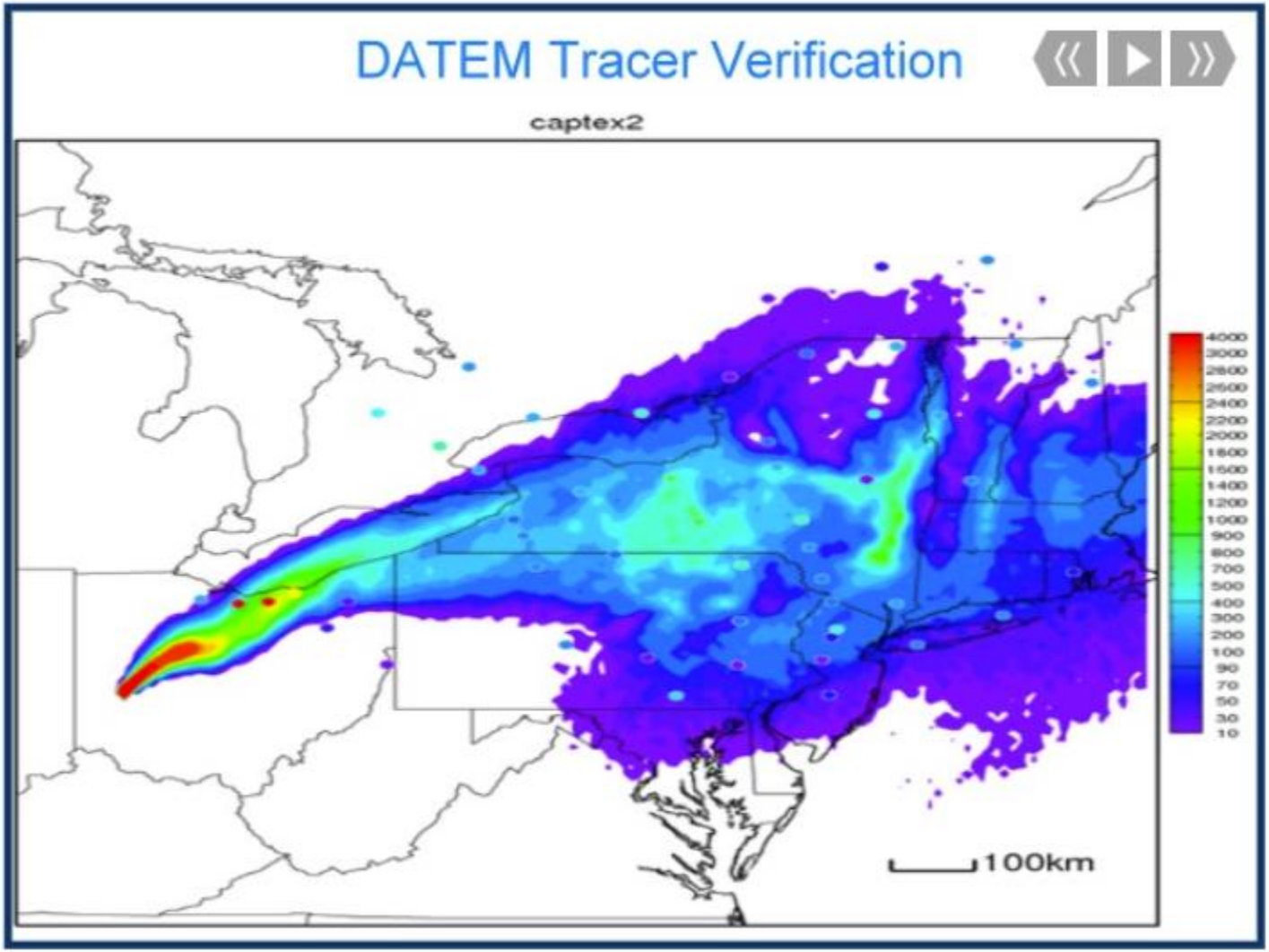


Emergency Assistance

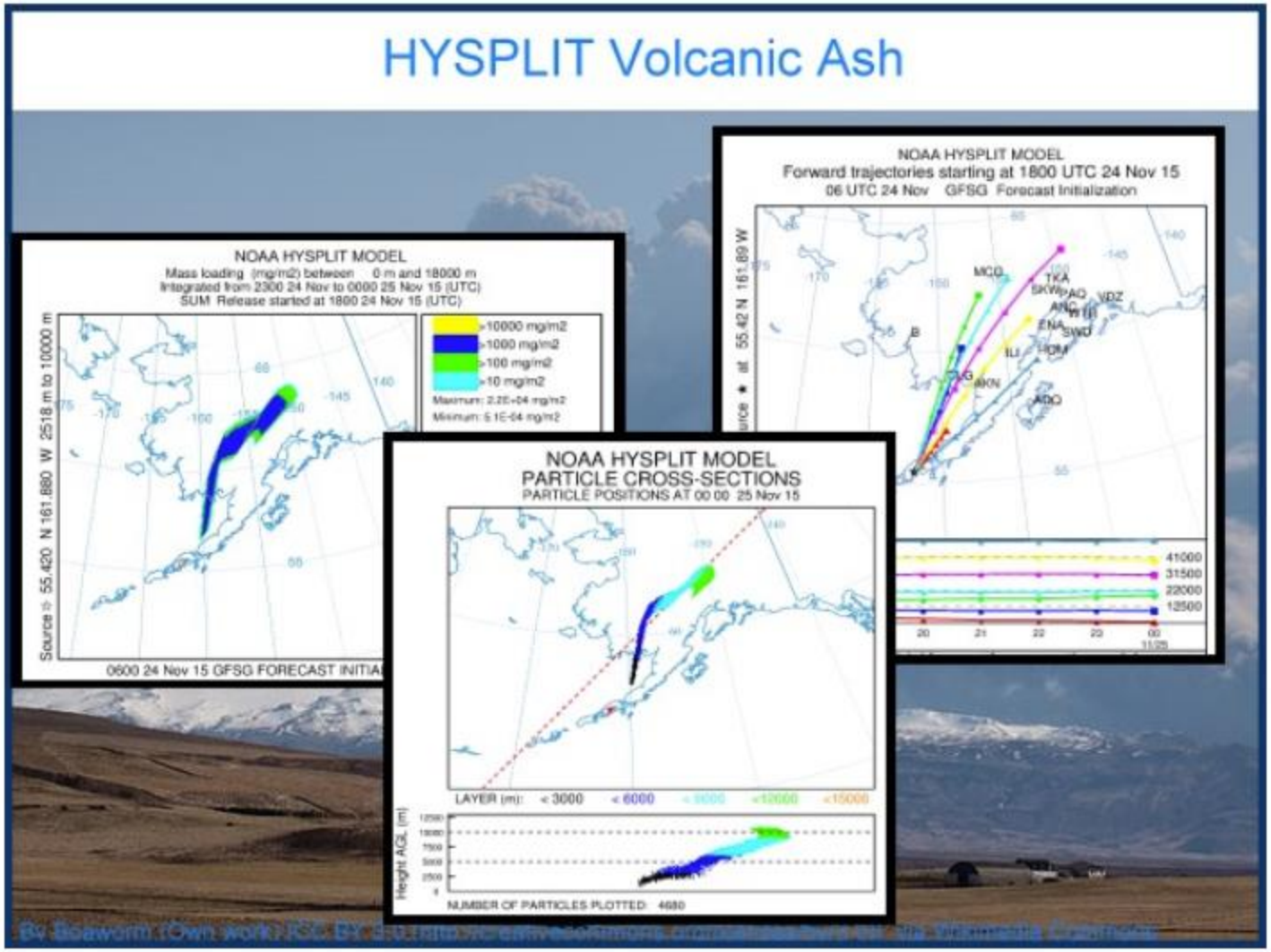


By English: Petty Officer 2nd Class Justin Stumberg [Public domain], via Wikimedia Commons

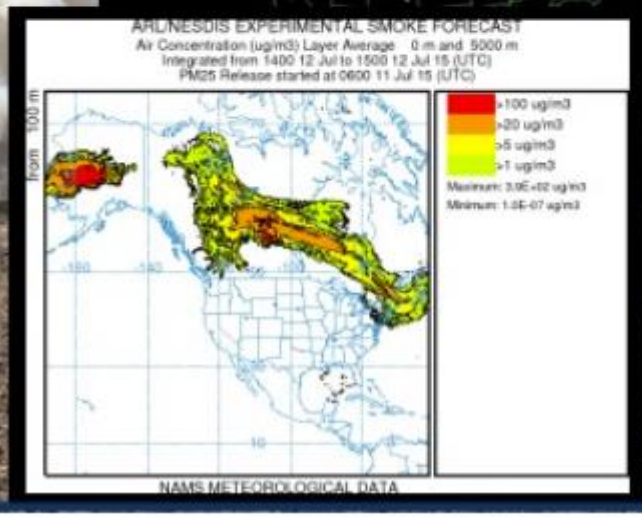
DATEM Tracer Verification



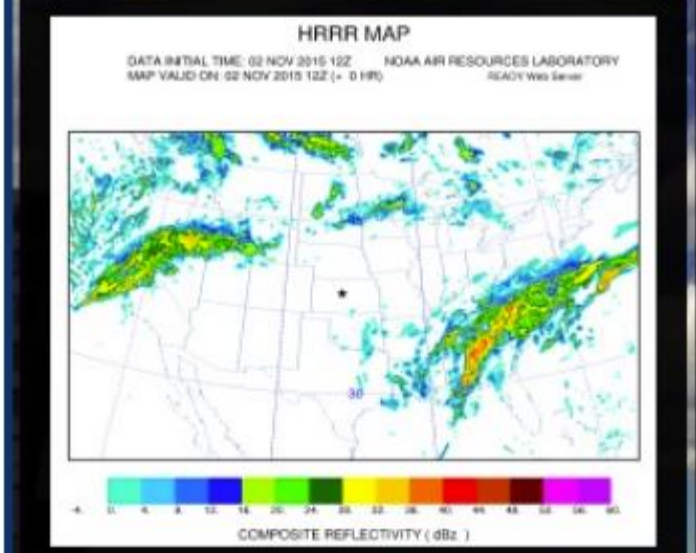
HYSPLIT Volcanic Ash

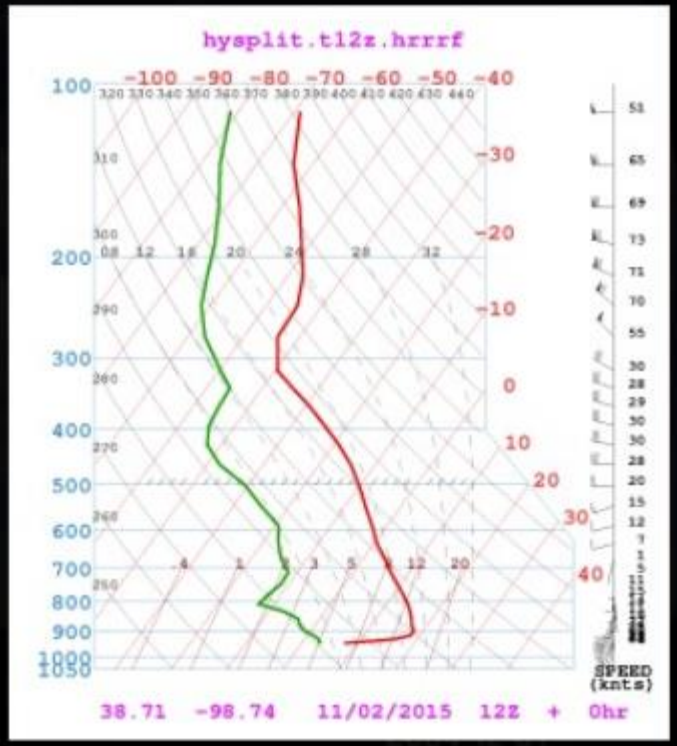


Wildfire Smoke Forecasting

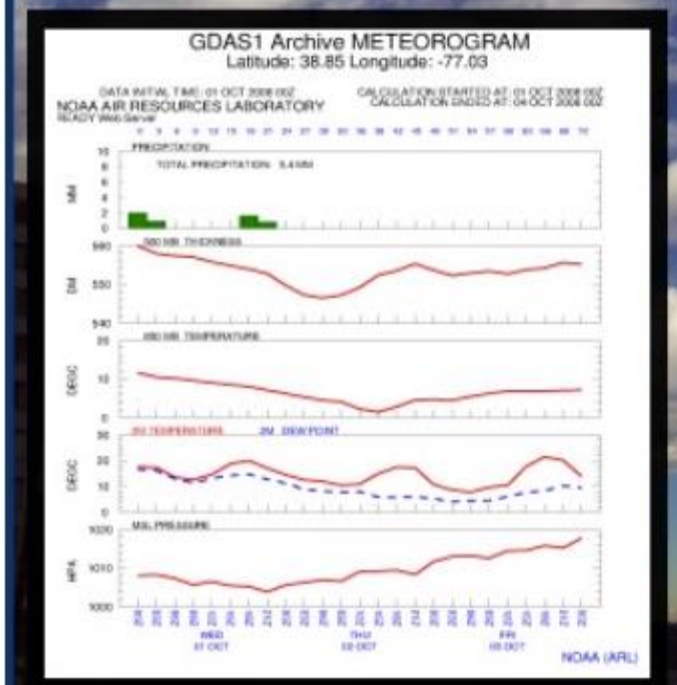


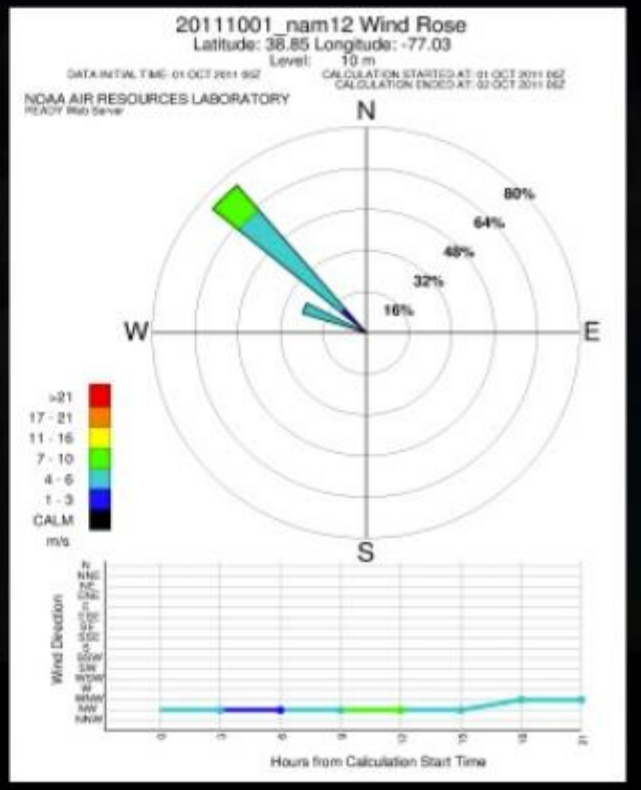
Current & Forecast Meteorology





Archived Meteorology





What height should you start a back-trajectory from, if you are trying to see where air masses impacting a given measurement came from?

What height should you start a back-trajectory at?

CASE 1:

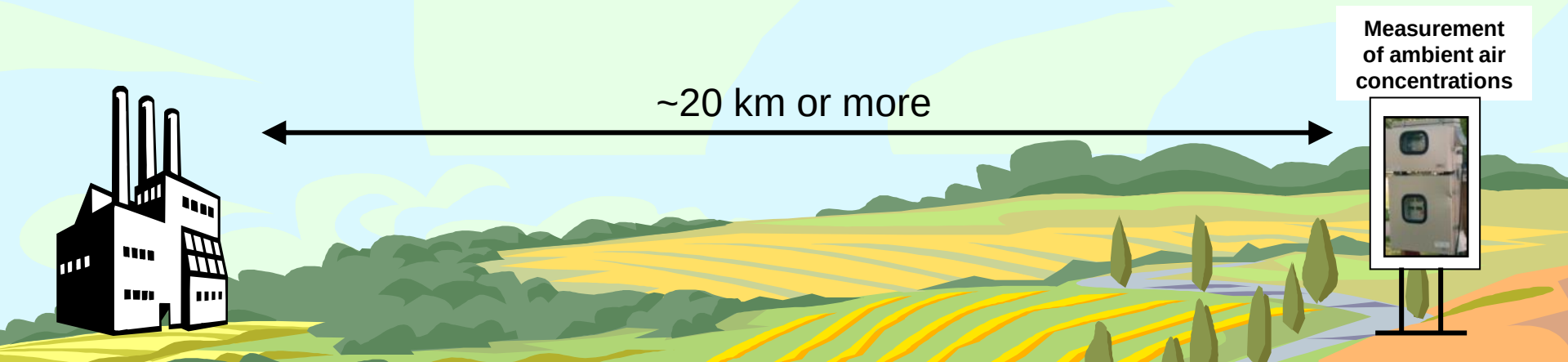
- **relatively simple terrain**
- **at least ~20 km or more away from any major sources**

CASE 2:

- **at the top of a relatively isolated mountain**

CASE 1:

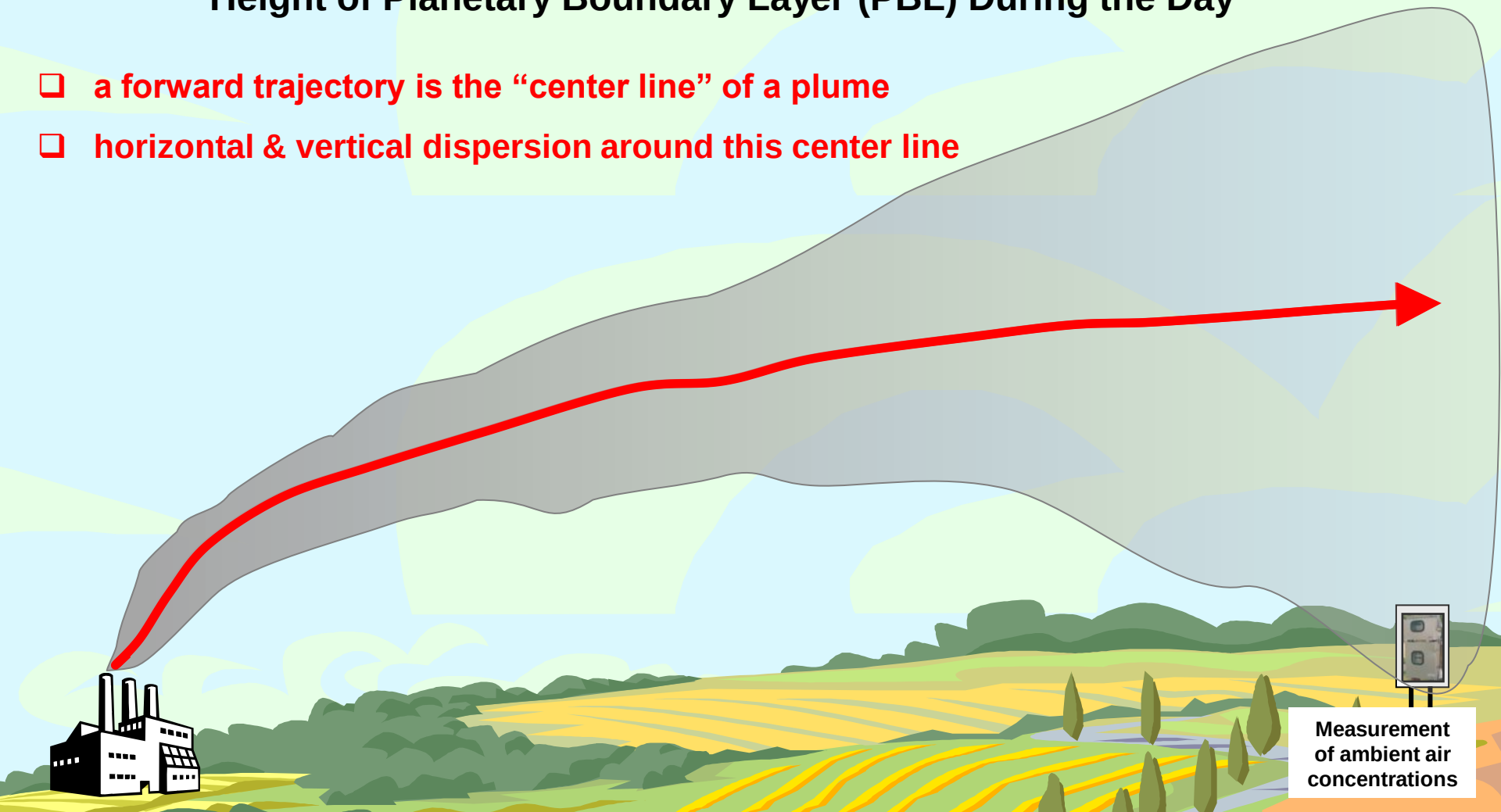
- **relatively simple terrain**
- **at least ~20 km or more away from any major sources**



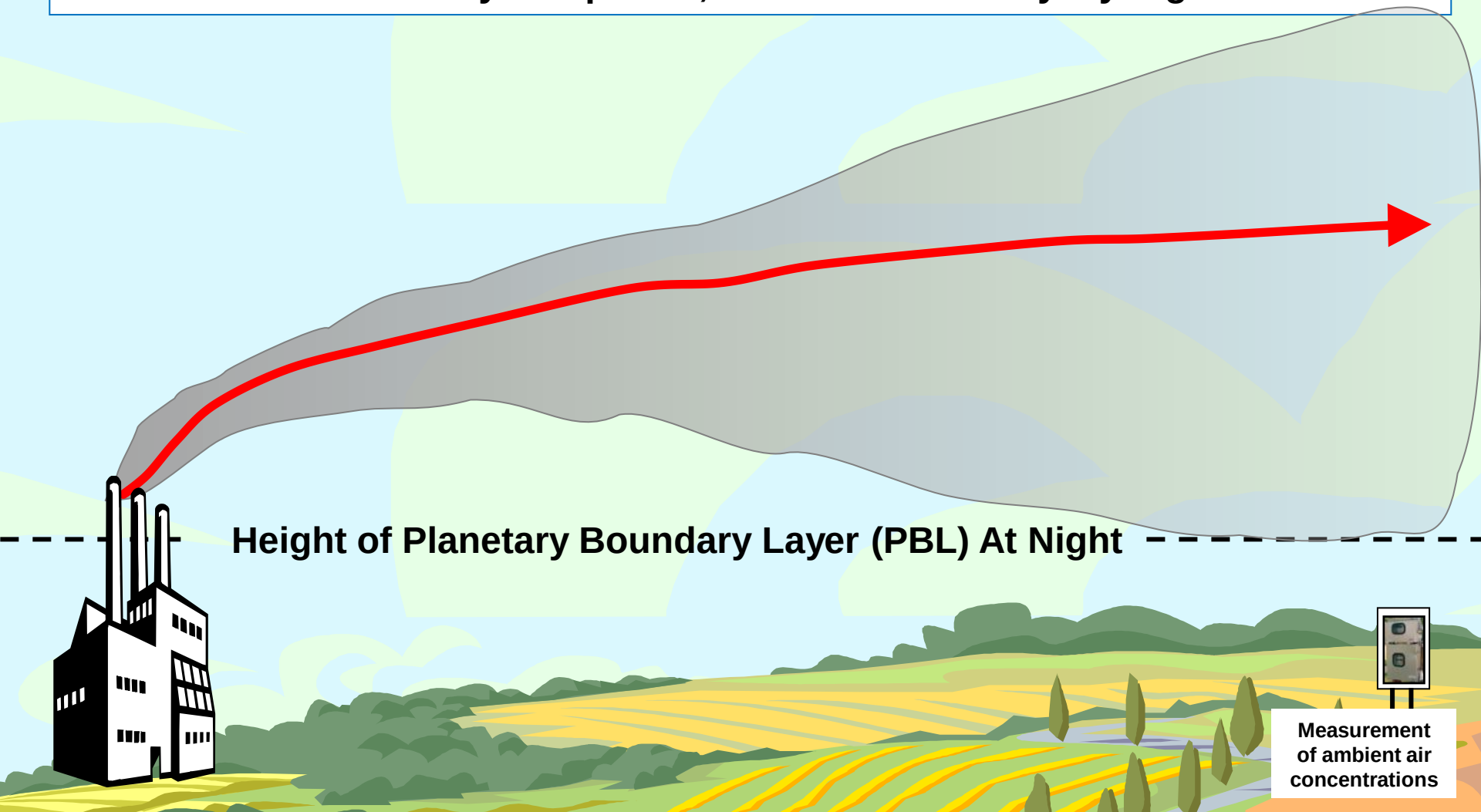
Greater than ~20km from the source,
if the forward trajectory from the source is within the PBL,
then the source can impact the measurement site,
even if the trajectory endpoint near the site is not at the height of the sampler…
This is because the PBL is relatively well-mixed during the day.

– – – – – – Height of Planetary Boundary Layer (PBL) During the Day – – – – – – –

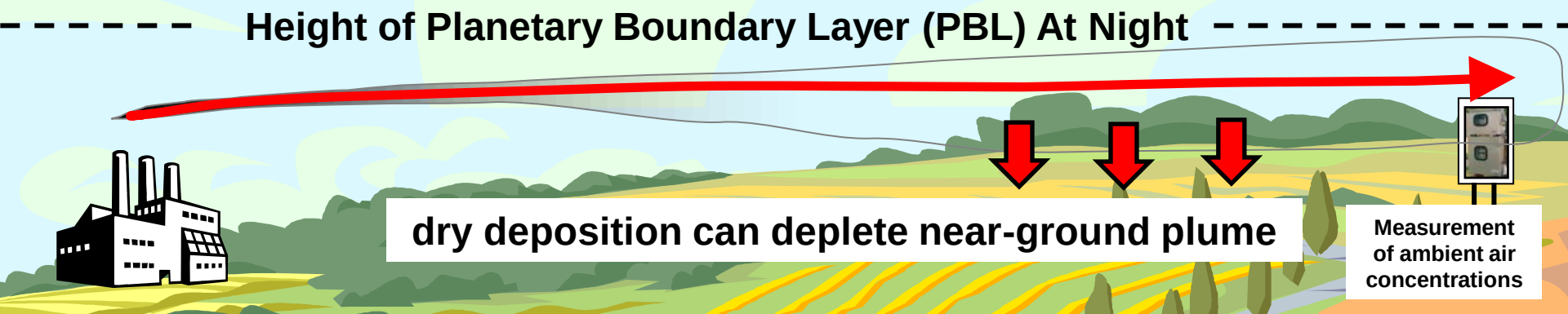
- **a forward trajectory is the "center line" of a plume**
- **horizontal & vertical dispersion around this center line**



- At night, the Planetary Boundary Layer (PBL) is generally much shallower
- Emissions from an elevated stack *may* be emitted above the PBL
- In this case, there *may* be little impact on a ground-based measurement site until the next daytime period, when the boundary layer grows.



- At night, the Planetary Boundary Layer (PBL) is generally much shallower
- Emissions from a relatively low stack may be emitted within the PBL
- Note, if the pollutant dry deposits relatively rapidly, by the time the plume reaches the receptor, there may be little pollutant left… **Back-trajectories do not include deposition!**

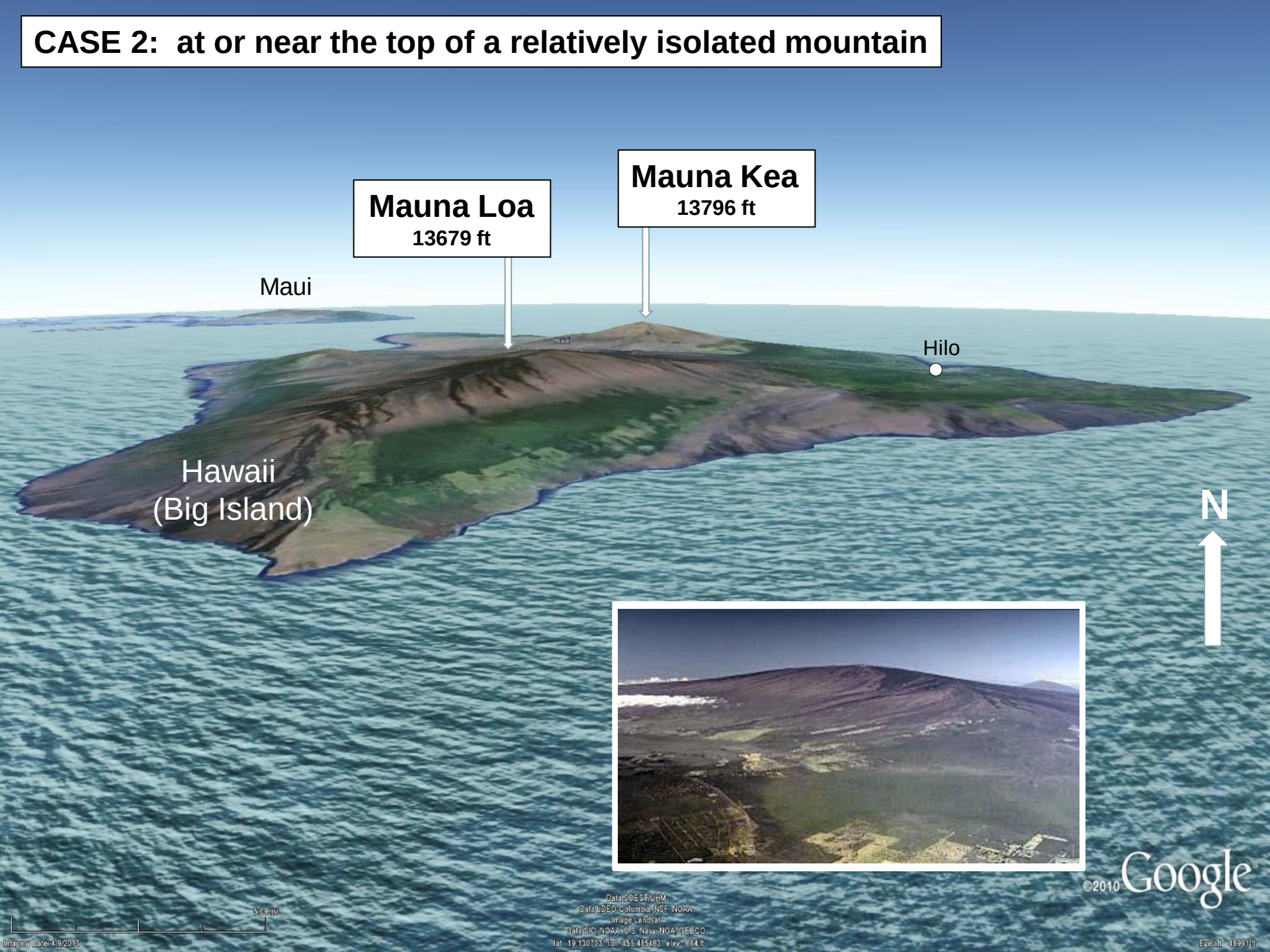


- What are the implications of these ideas for back-trajectories?
- What HEIGHT should one start a back-trajectory?
- If you start very low to the ground, e.g., at the sampler height, the trajectories often hit the ground… This may not give a representative back-trajectory
- "best" starting height for back-trajectories may be from the middle of the Planetary Boundary Layer
- It can be useful to start trajectories at different heights to see what influence the starting height has on the results

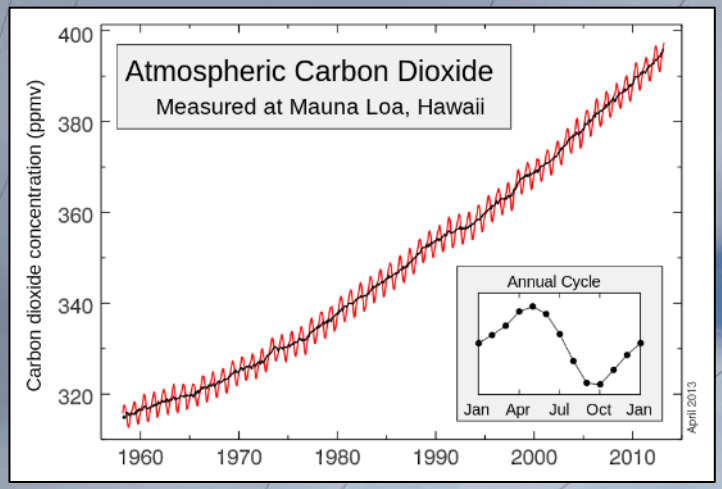
PBL Height

H = 0.5 * PBL

CASE 2: at or near the top of a relatively isolated mountain



Mercury measurement instruments on roof and inside historic Keeling Building, near the summit of Mauna Loa




Mercury measurement instruments on roof and inside historic Keeling Building, near the summit of Mauna Loa

In this case, especially if sampling free-tropospheric air masses, would likely want to start the back-trajectory simply at the height of the summit above mean sea level.

(1) Exact terrain height may not be that accurately characterized in the met data, so selecting a height Above Ground Level can be problematical

(2) Use Advanced Menu to select “Relative to mean-sea-level”, and could then simply use the height of the summit